GenCore version 4.5 Copyright (c) 1993 - 2000 Comp

Compugen Ltd

```
Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Post-processing:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Run
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A_Geneseq_0401:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       US-09-543-371-10
1340
                                                                                               /SIDS1/gcgdata/geneseq/geneseqp/AA1984.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1985.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1985.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1987.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1987.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1989.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1990.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1990.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1991.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1991.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1993.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1993.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1997.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1997.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1997.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1997.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1997.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1997.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1997.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1997.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1997.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              390729 seqs,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      April 13, 2001, 15:36:17; Search time 49.95 Seconds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GLKGKRGDSGSPATWTTRGF.....KAGELEKIISRCQVCMKKRH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      \(\sins1/\gcgdata/\geneseq/\geneseqp/\text{AA1980.DAT:*} \)
\(\sins1/\gcgdata/\geneseq/\geneseqp/\text{AA1981.DAT:*} \)
\(\sins1/\gcgdata/\geneseq/\geneseqp/\text{AA1982.DAT:*} \)
\(\sins1/\gcgdata/\geneseq/\geneseqp/\text{AA1983.DAT:*} \)
\(\sins1/\gcgdata/\geneseq/\geneseqp/\text{AA1983.DAT:*} \)
/SIDS1/gcgdata/geneseq/geneseqp/AA1999.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA2000.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA2001.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              57163235 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (without alignments)
279.236 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          390729
```

Pred. Ne score cand is No. is the number of results predicted by chance to have a greater than or equal to the score of the result being printed, s derived by analysis of the total score distribution.

					SUMMARIES	
		æ				
Result No.	Score	Query Match Length DB	ength		ID	Description
_ ;	1340	100.0	245	21	Y67942	Human type IV coll
2	1314	98.1	268	20	Y31993	Type IV collagen N
ω	1314	98.1	268	21	Y97555	Human alpha3(IV)NC
4	1210.5	90.3	471	20	Y44171	Bovine type IV col
5	1210.5	90.3	471	21	Y56783	Bovine alpha3 type
6	1199.5	89.5	471	16	R79163	Partial sequence o
7	1192	89.0	218	20	Y44172	Human type IV coll
8	1192	89.0	218	21	Y56784	Human alpha3 type
9	1170	87.3	218	16	R79164	Partial sequence o
10	960	71.6	406	21	B58169	Lung cancer associ
11	943.5	70.4	772	13	R23873	Human alpha 5 (IV)

WPI; 2000-097708/08. N-PSDB; 257158.

Kalluri

R,

45	44	43	42	41	40	<u>3</u> 9	38	37	36	<u>အ</u>	34	ω ω	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12
79.5	79.5	79.5	80	83.5	84.5	85	85	85.5	85.5	89.5	113	116	334	334	334	339.5	690.5	690.5	727	727	741.5	741.5	741.5	755.5	880	923	937.5	938.5	938.5	939	939	939	943.5
		•					•	6.4		•			24.9		4	Ģī.	_	1.	4.	٠	5	5	5	5	5	8	0.	0	0	0	0.	70.1	70.4
1247	1247	1247	775	404	924	962	940	539	409	539	21	21	72	72	68	1694	260	260	260	.260	258	258	242	430	211	229	309	264	264	260	260	229	772
21	19	16	19	15	19	20	20	11	20	11	21	21	21	21	21	19	21	20	21	20	21	20	21	21	21	10	21	21	20	21	20	21	18
\mathbf{L}	W56161	R77548	W79193	R53767	W79192	Y34389	Y34516	R07507	Y35136	R06647	Y95913	Y95912	Y95921	Y95919	Y95920	W40109	Y97556	Y31994	Y97558	Y31996	Y97554	Y31992	Y67946	в58180	Y95918	P93524	B54044	Y97557	Y31995	Y97553	Y31991	Y67943	W09643
Murine MEKK5. Mus	ç	MEKK5 protein. Mu	2	Yeast Mel 1 protei	Rat Hrs-2 polypept	Porphorymonas ging	Porphorymonas ging	Murine IL-2R beta	ο.	Murine interleukin		Human Goodpasture	_	Human Goodpasture		Human alpha-6(IV)	_	Type IV collagen N	n alpha6(IV)N	\mathbf{H}	_		n type I	Lung cancer associ	Human Goodpasture	æ	Human pancreatic c	n alpha5(IV)N	Type IV collagen N	2	Type IV collagen N	type IV	Human type IV coll

ALIGNMENTS

Human; type IV collagen; anti-angiogenic; angiogenesis; cancer; benign tumour; rheumatoid arthritis; diabetic retinopathy; psoriasis; ocular angiogenesis disease; Osler-Webber Syndrome; telangiectasia; myocardial angiogenesis; plaque neovascularisation; angiofibroma; 17-JUN-1998; 25-MAR-1999; WO9965940-A1 Homo sapiens Human type IV collagen alpha 3 chain protein sequence SEQ 03-APR-2000 (BETH-) BETH 17-JUN-1999; 23-DEC-1999. contraception; atherosclerosis; Y67942; Y67942 standard; Protein; 245 (first entry) ISRAEL DEACONESS MEDICAL CENT obesity. 98US-0089689. 99US-0126175. 99WO-US13737. scleroderma; hypertrophic scar; β cat scratch disease, ID NO:10.

```
RESULT
Y31993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ω
  20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Вþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 QY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      haemophiliac joints, angiofibroma, wound granulation, intestinal adhesions, atherosclerosis, scleroderma, hypertrophic scars, cat scratch disease, Helicobacter pylori ulcers, dialysis graft vascular access stenosis, contraception and obesity. The compositions can be used to inhibit a disease characterised by angiogenic activity, in conjunction with radiation therapy, chemotherapy or immunotherapy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          domain of the alpha 1, alpha 2 or alpha 3 chains of type IV collagen (a fragment, analogue, derivative or mutant, which has anti-angiogenic properties. The anti-angiogenic proteins, multimers and chimeras are useful for inhibiting angiogenic activity in mammalian tissue, especially for treating diseases chosen from angiogenesis-dependent
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Anti-angiogenic proteins comprising 3 chain of Type IV collagen used in and rheumatoid arthritis -
                                                                    angiogenesis; tumour; metastasis; therapy; diabetic ret. rheumatoid arthritis; retinal neovascularization; choroidal neovascularization; macular degeneration; corneal neovascularization; retinopathy of prematurity; corneal graft rejection; neovascular glaucoma; retrolental fibroplasia; epidemic keratoconjunctivitis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    cancers, benign tumours, rheumatoid arthritis, diabetic retinopathy, psoriasis, ocular angiogenesis diseases, Osler-Webber Syndrome, myocardial angiogenesis, plaque neovascularisation, telangiectasia,
            vitamin A deficiency; contact lens overwear; atopic keratitis; superior limbic keratitis; pterygium keratitis sicca; sogrens; acne rosacea; phylectenulosis; syphilis; Mycobacteria infection;
                                                                                                                                                                                      Type IV collagen; NC1 domain; non-collagenous
                                                                                                                                                                                                                          Type IV
                                                                                                                                                                                                                                                                  05-JAN-2000 (first entry)
                                                                                                                                                                                                                                                                                                                                          Y31993 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   182
                                                                                                                                                                                                                                                                                                                                                                                                                                         242 kkrh 245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Local Similarity 100 es 244; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               N
                                                                                                                                                                                                                                                                                                                                                                                N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          present
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GLKGKRGDSGSPATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLE 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYIS 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           glkgkrgdsgspatwttrgfvftrhsqttaipscpegtvplysgfsflfvqgnqrahgqd 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KKRH 244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               efraspflechgrgtcnyysnsysfwlaslnpermfrkpipstvkagelekiisroqvcm
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVCM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         \verb|rctvcegpaiaiav| hsqttdippcphgwislwkgfsfimftsagsegtgqalaspgscle|
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     lgtlgsclqrfttmpflfcnvndvcnfasrndysywlstpalmpmnmapitgralepyis
degeneration;
                                                                                                                                                                                                                            collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Fig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              sequence represents the human type IV collagen alpha 3 chain. invention describes an isolated protein chosen from the NCl
                                                                                                                                                                                                                            NC1 domain alpha-3 monomer.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  117pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     100.0%;
  chemical burn;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        bes an isolated protein chosen from the Post of alpha 3 chains of type IV collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 1340; DB 21;
Pred. No. 8.8e-134;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
  ulcer;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           the NC1 domain of the alpha 1, 2, e.g. treatment of benign tumors
  herpes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 21;
                                                                                                                                                                                          domain; human;
  simplex
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length
                                                                                                                                                                        retinopathy;
  infection;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                245;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         24 C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
```

```
marginal keratolysis; traumā; systemīc lupus; polyarteritis; Wegener's sarcoidosis; scleritis; Steven's Johnson disease; radial keratotomy; sickle cell anaemia; sarcoid; pseudoxanthoma elasticum; Paget's disease; vein occlusion; artery occlusion; carotid obstructive disease; chronic uveit: chronic vitritis; Lyme's disease; Bales disease; bechets dise myopia; optic pit; Stargart's disease; pars planitis; chronic retinal detachment; hyperviscosity Syndrome; toxoplas
                                      monomers can be produced via recombinant protein expression. The polynuclectides and polypeptides are used to treat an angiogenesis mediated disorder or condition, especially selected from solid and blood-borne tumours, diabetic retinopathy, rheumatoid arthritis, retinal neovascularization, choroidal neovascularization, macular degeneration, corneal neovascularization, retinopathy of prematurity, corneal graft rejection, neovascular glaucoma, retrolental fibroplasia, epidemic keratoconjunctivitis, vitamin A deficiency, contact lens overwear, atopic keraticis, superior limbic keratitis, the produced the produced of the produced contact lens overwear, atopic keratitis, superior limbic keratitis.
                                                                                                                                                                                                                                                                methods and kits for inhibiting angiogenesis, tumour growth and metastasis, and endothelial cell interaction with the extracellular matrix, each method comprising contacting the tumour or animal tissue with 1 or more isolated type IV collagen NC1 alpha chain monomer(s) selected from the group consisting of alpha-1, alpha-2, alpha-3 and alpha-6 NC1 chain monomers (see Y31991-96). The
                                                                                                                                                                                                                                                                                                                                                                                                         This sequence represents a recombinant type IV collagen non-collagenous (NC1) domain alpha-3 polypeptide composed of a BM40 signal sequence (which is cleaved from the mature protein) 1 facilitate protein secretion, and a mature protein comprising an affinity tag (facilitates purification and identification of the mature) and the alpha-1 chain monomer. The invention provides
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               haemangioma; Osler-Weber-Rendu; AIDS; ocular neovascular disease; osteoarthritis; chronic inflammation; Crohn's disease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Herpes zoster
Mooren ulcer;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Inhibition of angiogenesis with non-collagenous alpha chain monomer
useful for treating e.g. tumor growth or metastasis,
neovascularisation, etc -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   27-MAR-1998;
29-OCT-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ulceritive colitis; psoriasis; atherosclerosis; pemphigoid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          post-laser complication; fibrovascular tissue proliferation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Disclosure; Fig 17c; 56pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          WPI; 1999-601297/51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Hudson BG,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          26-MAR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WO9949885-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Key
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Homo sapiens.
pterygium keratitis sicca,
syphilis, mycobacteria infe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (UNIV ) UNIV KANSAS MEDICAL CENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Z20091.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sarras MP;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            infection; protozoan infection; Terrien's marginal degeneration;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     98US-0079783.
98US-0106170.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          99WO-US06445
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note=
18..26
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note= "affinity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   /note-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            . 268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 "BM40 signal peptide"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "NC1 alpha-3 monomer"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "mature protein"
                           sogrens, acne
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ' tag"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        infection; Kaposi's sarcoma;
       rosacea, phyl
degeneration,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Bechets disease;
                           phylectenulosis,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      toxoplasmosis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  uveitis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ţ
```

infections,

lipid

PE

XXXTTTT

当当日

```
RESULT
Y97555
DXXXX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9999999999999999888
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 anaemia, sarcoid, pseudoxanthoma elasticum, Pagets disease, vein occlusion, artery occlusion, carotid obstructive disease, chronic uveitis, chronic viritis, Lyme's disease, Eales disease, Bechets disease, myopia, optic pits, Stargarts disease, pars planitis, chronic retinal detachment, hyperviscosity syndromes, toxoplasmosi post-laser complications, abnormal proliferation of fibrovascular tissue, haemangiomas, Osler-Weber-Rendu, AIDS, ocular neovascular disease, osteoarthritis, chronic inflammation, Crohn's disease, osteoarthritis, chronic inflammation, Crohn's disease.
                                                                                                                                                                                                                                         tumour growth; integrin receptor; carcinoma; sarcoma; rhabdomyosarcoma; retinoblastoma; Ewing sarcoma; neuroblastoma; osteosarcoma; leukaemia; diabetic retinopathy; rheumatoid arthritis; neovascularisation; muscular degeneration; corneal graft rejection; vitamin A deficiency; atopic keratitis; Mycobacteria infection; chemical burn; sarcoid; Kaposi's sarcoma; sixkle cell anaemia; carotid obstructive disease; chronic inflammation; psoriasis; therapy; alpha3(IV)NC1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   burns, bacterial ulcers, fungal ulcers, herpes simplex infections, herpes zoster infections, protozoan infections, Kaposi's sarcoma, Mooren ulcer, Terrien's marginal degeneration, marginal keratolysis, trauma, systemic lupus, polyarteritis, Wegener's sarcoidosis, scleritis, Steven's Johnson disease, radial keratotomy, sickle cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Y97555
               Brooks
                                                                                                             31-MAR-2000; 2000WO-US08678
                                                                                                                                                                               WO200059532-A1
                                                                                                                                                                                                                                                                                                                                                          Type IV collagen alpha chain monomer; human; inhibitor; angiogenesis;
                                                                                                                                                                                                                                                                                                                                                                                         Human alpha3(IV)NC1 protein sequence.
                                                                                                                                                                                                                                                                                                                                                                                                                             12-FEB-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ulceritive colitis,
                                              (BIOS-) BIOSTRATUM INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ry Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Local Similarity
les 239; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5 KRGDSGSPATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQDLGTL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         cegpaiaiavhsqttdippcphgwislwkgfsfimftsagsegaggalaspgscleefra
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLEEFRA 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       P, Hudson B;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            standard; Protein; 268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         268 AA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                         (first entry)
                                                                            99US-0127391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       psoriasis, atherosclerosis, and pemphigoid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        98.1%;
99.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 1314; DB 20;
Pred. No. 5.6e-131;
0; Mismatches 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DB 20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         toxoplasmosis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (all
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         208
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0
```

```
RESULT
Y44171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ħ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 useful for treating diseases and conditions with accompanying undesired angiogenesis, e.g. solid and blood-borne tumours (e.g. melanomas, carcinomas, sarcomas, rhabdomyosarcoma, retinoblastoma, Ewing sarcoma, neuroblastoma, osteosarcoma or leukaemia). These are also applicable to treating non-tumourigenic diseases and conditions with accompanying undesired angiogenesis, e.g. diabetic retinopathy, rheumatoid arthritis, retinal neovascularisation, choroidal neovascularisation, muscular degeneration, corneal graft rejection, vitamin A deficiency, atopic keratitis, Mycobacteria infections, chemical burns, Kaposi's sarcoma, sickle cell anaemia, sarcoid, carotid obstructive disease, post-laser complications, chronic inflammation or psoriasis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              cells or tissue with a polypeptide composition containing antagonists of specific integrin receptors. The methods and the antagonists are useful for inhibiting angiogenesis, tumour growth or metastases, or endothelial cell interaction with the extracellular matrix. The antagonists are also
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Use of antagonists of specific integrin receptors for inhibiting angiogenesis, tumour growth or metastases, or endothelial cell interactions with the extracellular matrix -  \frac{1}{2} \int_{-\infty}^{\infty} \frac{1}{2} \left( \frac{1}{2} \int_
                                                                                                                                                                                                                                                                                                                                           Recombinant; bovine; alpha3 chain; type IV collagen; detection;
Goodpasture syndrome; antibody; blood; tissue; human; nephrotro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Bovine type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                01-FEB-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Y44171;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Y44171 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              designated alpha3(IV)NC1. The invention relates to a method for inhibiting angiogenesis, tumour growth or metastases, or endothelial cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Disclosure; Fig 17c; 78pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    WPI; 2000-664962/64
                                                                             26-OCT-1999
                                                                                                                                                                                                                                                     Bos taurus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          interactions with the extracellular matrix, comprising contacting
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             209
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                149
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             89
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     29
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           5 KRGDSGSPATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQDLGTL 64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVCMKKRH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLEEFRA 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GSCLQRETTMPFLFCNVNDYCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYISRCTV 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    gsclqrfttmpflfcnvndvcnfasrndysywlstpalmpmnmapitgralepyisrctv 148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                krgdsgspatwttrgfvftrhsqttaipscpegtvplysgfsflfvqgnqrahgqdlgtl 88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            cegpaiaiavhsqttdippcphgwislwkgfsfimftsagsegaggalaspgscleefra
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 239;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A90993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ٧I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     collagen alpha3 chain protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            a human type IV collagen alpha chain monomer, 3(IV)NC1. The invention relates to a method for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     98.1%;
99.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 1314; DB 21;
Pred. No. 5.6e-131;
0; Mismatches 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                208
```

07-MAR-1995;

95US-0399889

```
8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ₽
                                                                                                                                                                                                                                                                                                                                  Qy
                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                        Вb
                                                                                                                                                                                                                                                                                                                                                                                                                              γ
                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Query Match
Best Local S
Matches 221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  This sequence represents a recombinant bovine alpha3 chain of type IV collagen polypeptide. The sequence corresponds to the 238 amino acids of the C-terminal end of the triple helical domain and all 233 amino acids of the C-terminal non-collagenous domain. Alpha3 chain collagen polypeptides are useful for detecting Goodpasture antibodies in blood or tissue from a human patient and for treating Goodpasture syndrome, especially by neutralising the antibodies in the blood. The polypeptides also have a nephrotrophic activity.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (UYYA)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Claim 1; Column 31-34; 27pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                diagnosis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WPI; 1999-610317/52
N-PSDB; Z28774.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Hudson
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                30-NOV-1990;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Isolated alpha 3 chain of type IV collagen polypeptide useful for diagnosis and treatment of Goodpasture syndrome - \,
         07-OCT-1998;
                                                                                                                                                        27-MAR-2000
                                                                                                                                                                                                      Y56783 standard;
                                   28-DEC-1999.
                                                          US6007980-A.
                                                                                                         Goodpasture
                                                                                                                                 Bovine alpha3
                                                                                                                                                                                                                                                                467
                                                                                                                                                                                                                                                                                                              407
                                                                                                                                                                                                                                                                                                                                     180
                                                                                                                                                                                                                                                                                                                                                           347
                                                                                                                                                                                                                                                                                                                                                                                 120
                                                                                                                                                                                                                                                                                                                                                                                                         287
                                                                                                                                                                                                                                                                                                                                                                                                                                                     227
                                                                                                                                                                                                                                                                                       240 MKKR 243
                                                                                                                                                                                                                                                                                                                                                                                                                              60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 GLKGKRGDSGSPATWTT-RGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQ 59
                                                                                                                                                                                                                              5
                                                                                                                                                                                                                                                                                                                                                                                                     221;
                                                                                                                                                                                                                                                                mkmr 470
                                                                                                                                                                                                                                                                                                                       EEFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVC
                                                                                                                                                                                                                                                                                                                                                          SRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCL 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                     glkgkpgdtgppaagavmrgfvftrhsqttaipscpegteplysgfsllfvqgneqahgq 286
                                                                                                                                                                                                                                                                                                            eefraspfiechgrgtcnyysnsysfwlasldpkrmfrkpipstykageleniisrcqvc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BG,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            UNIV YALE.
UNIV KANSAS MEDICAL CENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               471 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Reeders
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                         syndrome; type IV collagen; alpha3 chain; bovine.
                                                                                                                                                       (first entry)
                                                                                                                               type IV collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                90US-0621091
             98US-0167364
                                                                                                                                                                                                       Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ST,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               90.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Morrison
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 1210.5; DB 2
Pred. No. 1.1e-119;
0; Mismatches 12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ΚE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Length 471;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ۲.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                      239
                                                                                                                                                                                                                                                                                                               466
                                                                                                                                                                                                                                                                                                                                                            406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1;
```

```
RESULT
R79163
                                                                                                                                                                                                                                                                                                                                                                QΥ
                                                                                                                                                                                                                                                                                                                                                                                                              QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                             QУ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Дb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SXX CCCCCXX PT PT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DR
XX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PR PR PA PA PA XX
DT XXX DE XXX PPN PR XXX PPR XXX
                                                                                                                                                                                                                                                                                            B
                                                                                                                                                                                                                                                                                                                 Q
                                                                                                                                                                                                                                                                                                                                           B
                                                                                                                                                                                                                                                                                                                                                                                          B
                                                                                                                                                                                            XXXXI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local S
Matches 221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      The invention provides a method of detecting Goodpasture antibodies in the fluid of a patient by contacting it with a peptide comprising onest 218 amino acids of the human alpha3 chain type IV collagen that contains the fragment shown in Y56785. The methods are useful for the diagnosis and treatment of Goodpasture syndrome. The present sequence represents the bovine alpha3 chain of type IV collagen.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Disclosure; Columns 19-24; 26pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Diagnosing and treating Goodpasture syndrome using a peptide derived from type {\tt IV} collagen -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   30-NOV-1990;
07-MAR-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WPI; 2000-096371/08
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Hudson BG,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              VIND ( AXXD)
                                                                                                                                                                                                          R79163
           30-NOV-1990;
                                                                                                          Bos taurus
                                                                                                                                 Type IV collagen; alpha 3 chain
                                                                                                                                                        Partial sequence of bovine alpha 3 chain of type IV collagen
                                                                                                                                                                                   22-DEC-1995
                                                                                                                                                                                                                                 R79163 standard; Protein;
                                  30-NOV-1990;
                                                                                  US5424408-A.
                                                          13-JUN-1995
                                                                                                                                                                                                                                                                                            467
                                                                                                                                                                                                                                                                                                                    240
                                                                                                                                                                                                                                                                                                                                           407
                                                                                                                                                                                                                                                                                                                                                                  180
                                                                                                                                                                                                                                                                                                                                                                                          347
                                                                                                                                                                                                                                                                                                                                                                                                               120
                                                                                                                                                                                                                                                                                                                                                                                                                                        287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 GLKGKRGDSGSPÄTWTT-RGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQ 59
                                                                                                                                                                                                                                                        6
                                                                                                                                                                                                                                                                                                                                                                                                    SRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCL 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    glkgkpgdtgppaagavmrgfvftrhsqttaipscpegteplysgfsllfvqgneqahgq 286
                                                                                                                                                                                                                                                                                              mkmr
                                                                                                                                                                                                                                                                                                                    MKKR
                                                                                                                                                                                                                                                                                                                                         EEFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVC
                                                                                                                                                                                                                                                                                                                                                                                      {\tt srctvcegpaiaiavhsqttdippcpagwislwkgfsfimftsagsegagqalaspgsclip}
                                                                                                                                                                                                                                                                                                                                                                                                                                        dlgtlgsclqrfttmpflfcnindvcnfasrndysywlstpamipmdmapitgralepyi 346
                                                                                                                                                                                                                                                                                                                                                                                                                                                               DIGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYI 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       221;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       246728
                                                                                                                                                                                                                                                                                                                    243
                                                                                                                                                                                                                                                                                              470
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  471 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Reeders ST,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               KANSAS MEDICAL CENT. YALE.
                                                                                                                                                                                  (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   90US-0621091
95US-0399889
                                   90US-0621091
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   90.3%;
90.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Morrison
                                                                                                                                                                                                                                  471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 1210.5; DB 2
Pred. No. 1.1e-119;
0; Mismatches 12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  471;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                    239
                                                                                                                                                                                                                                                                                                                                             466
                                                                                                                                                                                                                                                                                                                                                                                            406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            at
```

1;

```
В
PRXX FXX
                                                                                                                                                                                                                                                                                                 Š
                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                          Š
                                                                                                                                                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                   QУ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Using the PCR with primers derived from each end of the known 27 AA residue bovine alpha 3 (IV) collagen protein sequence, a 68 bp bovine genomic fragment was amplified. This fragment was then used to a bovine lens cDNA library and a 1.5 kb partial cDNA clone was obtd. (clone KMC15). This encodes 238 residues of the triple helical collagenous domain and all 233 residues of the C-terminal non-collagenous (NC1) domain of the alpha 3 (IV) chain. An isolated and
                                                                                                                                                                       01-FEB-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             cDNAs encoding human or bovine alpha-3 type 4 collagen peptide(s) - useful for detection and therapeutic removal of antibodies associated with Goodpasture syndrome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WPI; 1995-262631/34
N-PSDB; Q96290.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (UNIV)
                                                                                        Homo sapiens
                                                                                                               Goodpasture
                                                                                                                         Recombinant; bovine;
                                                                                                                                               Human type IV
                                                                                                                                                                                                                   Y44172 standard;
                     07-MAR-1995;
                                            26-OCT-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence
30-NOV-1990;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      substantially pure nt. having the seguence in Q96290 is claimed
                                                                                                                                                                                                                                                                                                 240
                                                                                                                                                                                                                                                                                                                       407
                                                                                                                                                                                                                                                                                                                                                                     347
                                                                                                                                                                                                                                                                                                                                                                                                                                                             227
                                                                                                                                                                                                                                                                           467
                                                                                                                                                                                                                                                                                                                                                                                                                 287
                                                                                                                                                                                                                                                                                                                                              180
                                                                                                                                                                                                                                                                                                                                                                                          120
                                                                                                                                                                                                                                                                                                                                                                                                                                      60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Local Similarity
nes 219; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    _
                                                                                                                                                                                                                                           7
                                                                                                                                                                                                                                                                                                 MKKR 243
                                                                                                                                                                                                                                                                                                                                                                                                            GLKGKRGDSGSPÄTWTT-RGFVETRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQ 59
                                                                                                                                                                                                                                                                           mkmr 470
                                                                                                                                                                                                                                                                                                                   eefraspfiechgrgtcnyysnsysfwlasldpkrmfrkpipstvkageleniisrcqvc
                                                                                                                                                                                                                                                                                                                                 EEFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVC
                                                                                                                                                                                                                                                                                                                                                                 \verb|srctvcegpaiaiavhsqttdippcpagwislwkgfsfimftsagsegaggalaspgscl|
                                                                                                                                                                                                                                                                                                                                                                              SRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               BG,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    UNIV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  471 AA;
                                                                                                               syndrome;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Columns 5-8; 33pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Morrison
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                      (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KANSAS MEDICAL CENT
                                                                                                                                               collagen alpha3 chain protein.
90US-0621091
                     95US-0399889
                                                                                                                                                                                                                  Protein;
                                                                                                               alpha3 chain; type IV collagen; detection;
; antibody; blood; tissue; human; nephrotro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   89.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ΥŒ,
                                                                                                             antibody;
                                                                                                                                                                                                                    218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 1199.5; DB 10
Pred. No. 1.5e-118;
Pred. No. 1.5e-118;
                                                                                                                                                                                                                    A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 16;
                                                                                                             human;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                471;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                         179
                                                                                                                                                                                                                                                                                                                                                                  406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ۲,
```

```
PIN PARKET PRINCE PRINC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT
Y56784
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QУ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DЪ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               This sequence represents a recombinant human alpha3 cha
collagen polypeptide. The sequence corresponds to the 2
of the C-terminal non-collagenous domain. Alpha3 chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (UYYA)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             polypeptides are useful for detecting Goodpasture antibodies in blood or tissue from a human patient and for treating Goodpasture syndrome, especially by neutralising the antibodies in the blood. The polypepti
                                                                                                              30-NOV-1990;
07-MAR-1995;
                                                                                                                                                                                                                                                                                                                                                          Goodpasture syndrome;
                                                                                                                                                                                                                                                                                                                                                                                                         Human alpha3
                                                                                                                                                                                                                                                                                                                                                                                                                                                     27-MAR-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Y56784;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               also
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    diagnosis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Hudson
Hudson BG,
                                       VIND ( AXAD)
                                                                                                                                                                               07-OCT-1998;
                                                                                                                                                                                                                         28-DEC-1999
                                                                                                                                                                                                                                                                   US6007980-A.
                                                                                                                                                                                                                                                                                                                Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Y56784 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Isolated alpha 3 chain of type IV collagen polypeptide useful diagnosis and treatment of Goodpasture syndrome -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WPI; 1999-610317/52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    207
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      œ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GWISLWKGFSFIMFTSAGSEGTGQALASPGSCLEEFRASPFLECHGRGTCNYYSNSYSFW 206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FASRNDYSYWLSTPALMPMNMAPITGRALEPYISRCTVCEGPAIAIAVHSQTTDIPPCPH 146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         QTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               have
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            gwislwkgfsfimftsagsegaggalaspgscleefraspflechgrgtcnyysnsysfw
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       fasrndysywlstpalmpmnmapitgralepyisrctvcegpaiaiavhsqttdippcph 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       217;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BG,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    UNIV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          a nephrotrophic activity.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Reeders
Reeders
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    YALE.
KANSAS
                                          KANSAS MEDICAL CENT. YALE.
                                                                                                                                                                                                                                                                                                                                                                                                      type
                                                                                                                                                                                                                                                                                                                                                                                                                                                   (first entry)
                                                                                                              90US-0621091
95US-0399889
                                                                                                                                                                               98US-0167364
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Protein;
                                                                                                                                                                                                                                                                                                                                                                                                         ٧I
ST,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ST,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDICAL CENT.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       89.0%;
                                                                                                                                                                                                                                                                                                                                                                                                         collagen
                                                                                                                                                                                                                                                                                                                                                          type IV collagen; alpha3 chain; human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     27pp; English.
Morrison KE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Morrison
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 1192;
Pred. No. 3
                                                                                                                                                                                                                                                                                                                                                                                                         C-terminal domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ã
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          XE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               treating Goodpasture syndrome,
ies in the blood. The polypeptides
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; DB 20;
3.5e-118;
hes 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    a3 chain of type IV
the 218 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               218;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 180
```

```
H
                                                                                                                                                                                                                                                                                                                                                                                                             Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                       γ
                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                   Дb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DЪ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DЪ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
cDNAs encoding human or bovine alpha-3 type 4 collagen peptide(s) -useful for detection and therapeutic removal of antibodies associated
                                                                                                  (UXYV)
                                           N-PSDB;
                                                    WPI; 1995-262631/34
                                                                             Hudson BG,
                                                                                                                                 30-NOV-1990;
                                                                                                                                                                                                  US5424408-A
                                                                                                                                                       30-NOV-1990;
                                                                                                                                                                              13-JUN-1995
                                                                                                                                                                                                                                     Type IV collagen; alpha 3 chain; Alport syndrome; COL4A3 gene.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ery Match
                                                                                                                                                                                                                        Homo sapiens
                                                                                                                                                                                                                                                                                                              R79164;
                                                                                                                                                                                                                                                                                                                             R79164 standard; Protein; 218
                                                                                                                                                                                                                                                                                      22-DEC-1995
                                                                                                                                                                                                                                                         	hetaartial sequence of human alpha 3 chain of type IV collagen.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  The invention provides a method of detecting Goodpasture antibodies in the fluid of a patient by contacting it with a peptide comprising most 218 amino acids of the human alpha3 chain type IV collagen that contains the fragment shown in Y56785. The methods are useful for the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     diagnosis and treatment of Goodpasture syndrome. The present sequence represents the carboxy terminal noncollagenous domain of the human alpha3 chain of type IV collagen.
                                                                                                                                                                                                                                                                                                                                                                                          181
                                                                                                                                                                                                                                                                                                                                                                                             207 LASLNPERMFRKPIPSTVKAGELEKIISRCQVCMKKRH 244
                                                                                                                                                                                                                                                                                                                                                                                                                                   121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Disclosure; Columns 23-26; 26pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Diagnosing and treating Goodpasture syndrome using a peptide derived from type {\rm IV} collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                          147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WPI; 2000-096371/08
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ш
                                                                                                                                                                                                                                                                                                                                                         و
                                                                                                                                                                                                                                                                                                                                                                                  laslnpermfrkpipstvkagelekiisrcqvcmkkrh 218
                                                                                                                                                                                                                                                                                                                                                                                                                         gwislwkgfsfimftsagsegagqalaspgscleefraspflechgrgtcnyysnsysfw 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GWISLMKGFSFIMFTSAGSEGTGQALASPGSCLEEFRASPFLECHGRGTCNYYSNSYSFW 206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    fasrndysywlstpalmpmnmapitgralepyisrctvcegpaiaiavhsqttdippcph
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FASRNDYSYWLSTPALMPMNMAPITGRÁLEPYISRCTVCEGDAIAIAVHSQTTDIPBCPH 146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  cal Similarity
217; Conser
                                                                                               UNIV KANSAS MEDICAL CENT.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            246729
                                                                           Morrison
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       218 AA;
                                                                                                                                                                                                                                                                                      (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                 90US-0621091
                                                                                                                                                     90US-0621091
                                                                                                                                                                                                                                                                                    entry)
                                                                           XE,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        89.0%;
99.5%;
                                                                           Reeders
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 1192; DB 21;
Pred. No. 3.5e-118;
0; Mismatches 1;
                                                                          ST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ô;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         for the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      86
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             at
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
```

```
B58169
                                                                                                                                                                                                                                                                                                                                                              RESULT 10
                                                                                                                                                                                                                                                                                                                                                                                                    DЪ
                                                                                                                                                                                                                                                                                                                                                                                                                          Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                    DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ър
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Using the PCR with primers derived from each end of the known 27 AA C residue bovine alpha 3 (IV) collagen protein sequence, a 68 bp bovine genomic fragment was amplified. This fragment was then used to a bovine lens cDNA library and a 1.5 kb partial cDNA clone was collagenous domain and all 23 residues of the C-terminal non-collagenous (NC1) domain of the alpha 3 (IV) chain. This bovine collagenous (NC1) domain of the alpha 3 (IV) chain. This bovine collagenous (NC1) domain and all 23 residues of the C-terminal non-collagenous (NC1) domain and alpha 3 (IV) chain. This bovine collagenous (NC1) domain and an alpha 3 (IV) chain. This clone encodes collagenous of the NC1 domain and a portion of the 3 UTR region collagenous of the NC1 domain and a portion of the 3 UTR region collagenous collagenous and therefore mutations in COL4A3 cannot be cand substantially pure nt. having the sequence in Q96291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                   cardioactive; immunomodulatory; muscular active; vulnerary; gastrointestinal; nephrotropic; antiinfective; gynecological; antibacterial; diagnosis; neural disorder; immune disorder; proliferative disorder; wound healing; infectious disease.
        (HUMA-) HUMAN GENOME SCI (ROSE/) ROSEN C A.
                                                                      08-MAR-2000; 2000WO-US05918
                                                                                                  21-SEP-2000
                                                                                                                          WO200055180-A2
                                                                                                                                                  Homo sapiens.
                                                                                                                                                                                                                               Human; lung
                                                12-MAR-1999;
                                                                                                                                                                                                                                                                                 14-MAR-2001
                                                                                                                                                                                                                                                                                                                                 B58169 standard;
                                                                                                                                                                                                                                                         Lung cancer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence
                                                                                                                                                                                                                                                                                                                                                                                            181 lasInpermsrkpipstvkagelekiisrcqvcmkkrh
                                                                                                                                                                                                                                                                                                                                                                                                        207 LASLNPERMFRKPIPSTVKAGELEKIISRCQVCMKKRH
                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               with Goodpasture syndrome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ب
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            {\tt gwislwkgfsfimfts agsegag qalaspgscleef paspflech grgtcnyysnsysfw}
                                                                                                                                                                                                                                                                                                                                                                                                                                                          GWISLWKGFSFIMFTSAGSEGTGQALASPGSCLEEFRASPFLECHGRGTCNYYSNSYSFW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           214;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                                                                    cancer associated protein; neuroprotective; cytostatic;
                                                                                                                                                                                                                                                 associated polypeptide sequence SEQ ID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        218
                                                                                                                                                                                                                                                                              (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Columns 7-10;
                                             99US-0124270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ĀĀ;
                                                                                                                                                                                                                                                                                                                               Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 87.3%;
98.2%;
                                                                                                                                                                                                                                                                                                                                 406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  33pp; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 1170; DB 16;
Pred. No. 7.4e-116;
0; Mismatches 4;
                                                                                                                                                                                                                                                                                                                               ĀΑ
                                                                                                                                                                                                                                                                                                                                                                                            218
                                                                                                                                                                                                                                                                                                                                                                                                                     244
                                                                                                                                                                                                                                                   507.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            218;
                                                                                                                                                                                   reproductive;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      146
                                                                                                                                                                                                                                                                                                                                                                                                                                            180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         86
```

0,

Ruben SM

```
RESULT
R23873
                                                                                                                                                                                                                                                                                                                                                                                                                                                         οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Š
                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                 B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CC Polynucleotide sequences F17982 - F18424 encode human lung cancer CC associated proteins represented in B58166 - B58548. Lung cancer CC associated proteins and polynucleotide sequences, their agonists, and CC antagonists may have neuroprotective; cytostatic; cardioactive; CC immunomodulatory; muscular active general; vulnerary; gastrointestinal CC general; nephrotropic; antiinfective; gynecological; or antibacterial CC activity. The invention also includes antibodies specific for the protein CC or polynucleotide sequences. The lung cancer associated polynucleotide sequences may be used for detection of lung cancer, chromosome CC sequences may be used for detection of lung cancer, chromosome CC or research purposes. The proteins may be used to treat disorders such as neural, immune, muscular, reproductive, gastrointestinal, pulmonary, CC cardiovascular, renal, and proliferative disorders. The proteins may also be used in the treatment of wounds and infectious diseases.

CC Polynucleotide sequences F18425 - F18433 and peptide B58549 are used in the course of the invention for the identification and characterisation contents.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Lung cancer associated gene sequences, referred to as lung cancer antigens, useful for treatment, prevention, and diagnosis of disorders
Ney Location/Qualifiers Misc-difference 43..47
                                                                                                                                                                                       R23873 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Claim 11; Page 996-998; 1425pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       WPI; 200
N-PSDB;
                                                                                                                                 25-NOV-1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence
                                                                                                                                                                                                                                                             404 rr 405
                                                                                                                                                                                                                                                                                       241
                                                                                                                                                                                                                                                                                                                                                                           284
                                                                                                                                                                                                                                                                                                                                                                                                       121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     11
                                                                                                                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local Similarity
les 167; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 GLKGKRGDSGSPATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQD
                                             sapiens
                                                                                                                                                                                                                                                                                        KK 242
                                                                                                                                                                                                                                                                                                               2000-587514/55
DB; F18045.
                                                                                                                                                                                                                                                                                                                                                                                                                                LGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYIS
                                                                                                    alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              polynucleotide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   406 AA;
                                                                                                    G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                               (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 cancer
                                                                                                    (IV) of type IV collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           71.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              and protein sequences
                                                                                                                                                                                         772
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 960; DB 21;
Pred. No. 2.9e-93;
                                                                         basement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     English.
                                                                         membranes;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 406;
                                                                         diabetes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                         mellitus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                            240
                                                                                                                                                                                                                                                                                                                                                                                                                                                          120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        223
                                                                                                                                                                                                                                                                                                                                                                                                                                283
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1;
```

```
Qy
                                밁
                                                          Qy
                                                                                         В
                                                                                                                  Qy
                                                                                                                                                  밁
                                                                                                                                                                        Qy
                                                                                                                                                                                                       Вb
                                                                                                                                                                                                                                  Ωy
                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                             Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                            type IV collagen, the major component of basement membranes. The protien contains the Gly-X-Y repeat coding sequence typical for collagenous proteins at one end and a typical NC-domain coding sequence at the other end. The sequence can be used to detect mutations in individual genes specific for this chain which can, directly or indirectly, produce several human diseases. It can also be used to determine genetic, e.g. Alport's syndrome, or acquired e.g. diabetes mellitus, disorders of the basement membrane, and as probes or antibodies against these nucleotide sequences. Gene fragments generated through amplifications from human genomic or cloned DNA can also be used for detection and analysis of genes.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Isolation of DNA encoding alpha-5(IV)polypeptide of type IV collagen - to detect mutations in genes for alpha-5(IV) chawhich produce genetic or acquired basement membrane disorders. Alport's syndrome
                                                                                                                                                                                                                                                                                                                                    Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              The sequence is that of the alpha 5(IV) polypeptide chain of human type IV collagen, the major component of basement membranes. The
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        07-JUL-1989;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   07-JUL-1989;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               19-MAY-1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Misc-difference
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Disclosure; Fig 2; 14pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WPI; 1992-192174/23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Hostikka SL,
    240
                                709
                                                             180
                                                                                         649
                                                                                                                     120
                                                                                                                                                  589
                                                                                                                                                                            60
    MKK 242
                                                                                                     SRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCL 179
                                                                                                                                                               DLGTLGSCLQRETTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYI 119
                                                                                                                                                                                                    gpdglqgppgpgtssvahgflitrhsqttdapqcpqgtlqvyegfsllyvqgnkrahgq 588
                                                                                                                                                                                                                     GLKGKRGDSGSPATWT-TRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQ 59
                                eefrsapfiechgrgtcnyyansysfwlatvdvsdmfskpgsetlkagdlrtrisrcgvc
                                              EEFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVC 239
                                                                                                                                               dlgtagsclrrfstmpfmfcninnvcnfasrndysywlstpepmpmsmqplkgqsiqpfi
                                                                                       srcavceapavviavhsqtiqiphcpqgwdslwigysfmmhtsagaegsgqalaspgscl
                                                                                                                                                                                                                                                                165;
                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                      772 AA;
                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Tryggvason
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   89US-0377238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note= ":
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     /note= "1
456..458
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note= "
275..277
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note= ":
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note=
                                                                                                                                                                                                                                                                             70.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "interruption
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "interruption
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                "interruption
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "interruption
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "interruption
                                                                                                                                                                                                                                                                35;
                                                                                                                                                                                                                                                             Score 943.5; DB 13;
Pred. No. 3.7e-91;
35; Mismatches 42;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ij
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ę
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gly-X-Y sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gly-x-Y
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gly-X-Y
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 sequence"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          sequence"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     sequence"
                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                        Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                disorders
                                                                                                                                                                                                                                                                                           772;
                                                                                                                                                                                                                                                              1;
                                                                                                                                                                                                                                                              Gaps
```

769

mkr

648

1;

708

```
RESULT
W09643
20-DEC-1990;
07-JUL-1989;
11-OCT-1994;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     W09643;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             W09643 standard; Protein; 772
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Collagen alpha5(IV); basement membrane; Alport's syndrome; nephritis; kidney; renal failure; antibody; diagnosis; COI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Human type IV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            16-JUN-1997
                     The amino acid sequence of a portion (W09643) of the previously unknown human type IV collagen chain, alpha5(IV), was deduced from conserved sequences of human alpha1(IV) and alpha2(IV) collagen chains and of the Drosophila alpha1(IV) chain. It includes a complete non-collagenous domain that shows 83% identity with that of alpha1(IV) and 63% with that of the alpha2(IV) chain. Mutation in the alpha5(IV) gene (COLAA5) are associated with Alport's syndrome. Antibodies raised against a peptide (see also *W09644) specific to alpha5(IV) can be used in the diagnosis of basement membrane disorders such as Alport's syndrome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Domain
                                                                                                                                                                                                                                                                                                                                                                                                        07-JUL-1989;
                                                                                                                                                                                                                                                                                                                                                                                                                                                         US5593900-A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Peptide
                                                                                                                                                                                                                                         N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                               14-JAN-1997
                                                                                                                                                                                                                                                                             Hostikka SL,
                                                                                                                                                                            Disclosure; Fig
                                                                                                                                                                                                                                                                                                       (TRYG/)
Sequence
                                                                                                                                                                                                                                                                                                                                HOST/)
                                                                                                                                                                                                               lew antibodies
                                                                                                                                                                                                                                                                                                                    (/HYOH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    chromosome
                                                                                                                                                                                                                                                                                                       TRYGGVASON K.
                                                                                                                                                                                                                                                                                                                   HOSTIKKA S L.
HOYHTYA M.
                                                                                                                                                                                                    detect
  772
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (first
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    collagen alpha-5
                                                                                                                                                                                                                                                                               Hoyhtya
                                                                                                                                                                                                                                                                                                                                                       90US-0630563.
89US-0377238.
94US-0321084.
                                                                                                                                                                                                     specific for human type IV collagen alpha5 chain - absence of this chain in patients with renal failure
                                                                                                                                                                                                                                                                                                                                                                                                          89US-0377238
    AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   544..772
/label= Non-collagenous_domain
742..751
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Location/Qualifiers
1..543
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /label=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /label=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               - Immunogenic_peptide
"peptide used to raise diagnostic
antibodies (Claim 1)"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "collagenous domain contains Gly-X-Y tripeptide repeats, interrupted at positions 43-47, 159-160, 275-276, 334-335, 456-459"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Collagenous_domain
                                                                                                                                                                                                                                                                                Tryggvason K;
                                                                                                                                                                               English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COL4A5 gene;
                                                                                Mutations
```

Best Loc Matches Query Match

Local 165;

Similarity

70.48;

Score 943.5; DB 1 Pred. No. 3.7e-91;

Conservative

35;

Mismatches

42; 18;

Indels Length

1;

Gaps

```
밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ΩV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Вp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RESULT
Y67943
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   B
                                                                                                                                                                                                                                                                                                                                                                                                                                                     PD
XX
PF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Y67943;
The present sequence represents the human type IV collagen alpha 1 chain. The present invention describes an isolated protein chosen from the NC1 domain of the alpha 1, alpha 2 or alpha 3 chains of type IV collagen or a fragment, analogue, derivative or mutant, which has anti-angiogenic properties. The anti-angiogenic proteins, multimers and chimeras are useful for inhibiting angiogenic activity in mammalian tissue, especially for treating diseases chosen from angiogenesis-dependent cancers, benign tumours, rheumatoid arthritis, diabetic retinopathy, psoriasis, ocular angiogenesis diseases, Osler-Webber Syndrome, myocardial angiogenesis, plaque neovascularisation, intestinal haemophiliac joints, angiofibroma, wound granulation, intestinal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Human; type IV collagen; anti-angiogenic; angiogenesis; cancer; benign tumour; rheumatoid arthritis; diabetic retinopathy; psoriasiocular angiogenesis disease; Osler-Webber Syndrome; telangiectasia; myocardial angiogenesis; plaque neovascularisation; angiofibroma;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Human type IV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     03-APR-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Y67943 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   649
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          589
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  529
                                                                                                                                                                                                       Anti-angiogenic proteins comprising 3 chain of Type IV collagen used in, and rheumatoid arthritis .
                                                                                                                                                                                                                                                                                                                                                                                                                                         23-DEC-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WO9965940-Al
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           contraception;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         atherosclerosis;
                                                                                                                                                                                                                                                                                                                                                                  17-JUN-1998;
25-MAR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                            17-JUN-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                120
                                                                                                                                                                             Example
                                                                                                                                                                                                                                                                  N-PSDB;
                                                                                                                                                                                                                                                                                                           Kalluri
                                                                                                                                                                                                                                                                                                                                      (BETH-) BETH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    769
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            709
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GLKGKRGDSGSPATWT-TRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              \verb|gpdglqgppgpgtssvahgflitr| hsqttdapqcpqgtlqvyegfsllyvqgnkrahgq|
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  {\tt srcavceapavviavhsqtiqiphcpqgwdslwigysfmmhtsagaegsgqalaspgsclip}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        \tt dlgtagsclrrfstmpfmfcninnvcnfasrndysywlstpepmpmsmqplkgqsiqpfi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DLGTLGSCLQRETTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ₽kr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         \tt eefrsapfiech grgtcnyy ansysfwlatvdvsdmfskpqsetlkagdlrtrisrcqvc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EEFRASPELECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MKK 242
                                                                                                                                                                                                                                                               2000-097708/08
DB; Z57159.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      771
                                                                                                                                                                             1; Fig 1B; 117pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (first entry)
                                                                                                                                                                                                                                                                                                                                        ISRAEL DEACONESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            collagen alpha 1 chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              obesity
                                                                                                                                                                                                                                                                                                                                                                   98US-0089689
99US-0126175
                                                                                                                                                                                                                                                                                                                                                                                                               99WO-US13737
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            scleroderma;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 229
                                                                                                                                                                                 English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            hypertrophic
                                                                                                                                                                                                                                                                                                                                         MEDICAL CENT
                                                                                                                                                                                                                         the NC1 domain of the alpha 1, 2, e.g. treatment of benign tumors
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               protein sequence SEQ ID NO: 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               scar; cat scratch
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        psoriasis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                disease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    648
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           588
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              708
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        179
```

```
RESULT 14
Y31991
KKKKKKK X D X D X A X I D X A X I D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    88888888
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                     superior limbic keratitis; pterygium keratitis sicca; sogrens; acne rosacea; phylectenulosis; syphilis; Mycobacteria infection; lipid degeneration; chemical burn; ulcer; herpes simplex infection; protozoan infection; Kaposi's sarcoma; Mooren ulcer; Terrien's marginal degeneration; marginal keratolysis; trauma; systemic lupus; polyarteritis; megener's sarcoidosis; scleritis; Steven's Johnson disease; radial keratotomy; sickle cell anaemia; sarcoid; radial keratotomy; sickle cell anaemia; sarcoid;
                                                                                                                                                                                                                            pseudoxanthoma elasticum; Paget's disease; vein occlusion; artery occlusion; carotid obstructive disease; chronic uveitis; chronic vitritis; Lyme's disease; Eales disease; Bechets disease; myopia; optic pit; Stargart's disease; pars planitis; chronic retinal detachment; hyperviscosity syndrome; toxoplasmosis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      disease, Helicobacter pylori ulcers, dialysis graft vascular access stenosis, contraception and obesity. The compositions can be used to inhibit a disease characterised by anglogenic activity, in conjunction with radiation therapy, chemotherapy or immunotherapy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         corneal graft rejection; neovascular glaucoma; retrolental fibroplasia; epidemic keratoconjunctivitis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       rheumatoid arthritis; retinal neovascularization; choroidal neovascularization; macular degeneration;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  adhesions, atherosclerosis, scleroderma; hypertrophic scars, disease, Helicobacter pylori ulcers, dialysis graft vascular
Protein
                                                                                              Syntheti
                                                                                                                                                                                                          post-laser complication; fibrovascular tissue proliferation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             vitamin A deficiency; contact lens overwear;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       corneal neovascularization; retinopathy of prematurity;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 angiogenesis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Type IV collagen; NC1 domain; non-collagenous domain; human;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Type IV collagen NC1 domain alpha-1 monomer.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                05-JAN-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Y31991 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence
                                                                                                              Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          185 yanaysfwlatiersemfkkptpstlkagelrthvsrcqvcmrr 228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              199 YSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVCMKK 242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           139 TDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLEEFRASPFLECHGRGTCNY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               65 cninnvcnfasrndysywlstpepmpmsmapitgenirpfisrcavceapamvmavhsqt 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             19 GFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQDLGTLGSCLQRFTTMPFLF 78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   iqippcpsgwsslwigysfvmhtsagaegsgqalaspgscleefrsapfiechgrgtcny
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYISRCTVCEGPAIAIAVHSQT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       161;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         = = = ::::
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    229
                                                                                                                                                    colitis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                  Osler-Weber-Rendu; AIDS; ocular neovascular disease; is; chronic inflammation; Crohn's disease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             tumour; metastasis; therapy; diabetic retinopathy;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AA,
/note= "BM40
18..260
                                                    Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       70.1%;
71.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 939; DB 21;
Pred. No. 2.2e-91;
                signal peptide"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A
                                                                                                                                                    atherosclerosis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             atopic keratitis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 229;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  cat scratch
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       18,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0
```

```
XX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mooren ulcer, Terrien's marginal degeneration, marginal keratolysis, trauma, systemic lupus, polyarteritis, Wegener's sarcoidosis, scleritis, Steven's Johnson disease, radial keratotomy, sickle cell anaemia, sarcoid, pseudoxanthoma elasticum, Pagets disease, vein occlusion, artery occlusion, carotid obstructive disease, chronic uveitis, chronic vitritis, Lyme's disease, Eales disease, Bechets disease, myopia, optic pits, Stargarts disease, pars planitis, chronic retinal detachment, hyperviscosity syndromes, toxoplasmosis, post-laser complications, abnormal proliferation of fibrovascular
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 monomer(s) selected from the group consisting of alpha-1, alpha-2, alpha-3 and alpha-6 NC1 chain monomers (see Y31991-96). The monomers can be produced via recombinant protein expression. The polynucleotides and polypeptides are used to treat an anglogenesis-mediated disorder or condition, especially selected from solid and blood-borne tumours, diabetic retinopathy, rheumatoid arthritis, retinal neovascularization, choroidal neovascularization, macular degeneration, corneal neovascularization, retinopathy of prematurity corneal graft rejection, neovascularization, retinopathy of prematurity corneal graft rejection, neovascularization, retinopathy of prematurity corneal graft rejection, neovascularization, retinopathy of graft rejection, neovascularization, retinopathy of prematurity corneal graft rejection, neovascularization, retinopathy of prematurity dependence and prematurity dependence and prematurity dependence and prematurity of prematurity dependence and prematurity of prematurity of prematurity dependence and prem
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            methods and kits for inhibiting angiogenesis, tumour growth and metastasis, and endothelial cell interaction with the extracellular matrix, each method comprising contacting the tumour or animal tissue with 1 or more isolated type IV collagen NC1 alpha chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           facilitate protein secretion, and a mature protein comprising an affinity tag (facilitates purification and identification of the material) and the alpha-1 chain monomer. The invention provides
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      pterygium keratitis sicca, sogrens, acne rosacea, phylectenulosis, syphilis, mycobacteria infections, lipid degeneration, chemical burns, bacterial ulcers, fungal ulcers, herpes simplex infections, herpes zoster infections, protozoan infections, Kaposi's sarcoma,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    useful for treating e.g. tumor growth or metastasis, neovascularisation, etc
Sequence
                                                                                           tissue, haemangiomas, Osler-Weber-Rendu, AIDS, ocular neovascudisease, osteoarthritis, chronic inflammation, Crohn's disease ulceritive colitis, psoriasis, atherosclerosis, and pemphigoid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          BM40 signal sequence (which is cleaved from the mature protein)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    non-collagenous (NC1) domain alpha-1 polypeptide composed of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Disclosure; Fig 17a; 56pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Inhibition of angiogenesis with non-collagenous alpha chain monomer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         N-PSDB; Z20089
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WPI; 1999-601297/51
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (UNIV ) UNIV KANSAS MEDICAL CENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              27-MAR-1998;
29-OCT-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            26-MAR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          07-OCT-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WO9949885-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        sequence represents a recombinant type IV collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        BG,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sarras MP;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 98US-0079783.
98US-0106170.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            99WO-US06445
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note= "affinity tag" 26..260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               /note= "mature protein"
18..25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "NC1 alpha-1 monomer'
                                                                                                                                                                ocular neovascular
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                prematurity
```

Query Match 70.1 Best Local Similarity 71.9 Matches 161; Conservative

70.1%; 71.9%;

Score 939; DB 20; Pred. No. 2.7e-91; Mismatches

Length 260; Indels

0;

Gaps

0

30;

```
Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Q
         δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Y97553 standard; Protein; 260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              tumour growth; integrin receptor; carcinoma; sarcoma; rhabdomyosarcoma; retinoblastoma; Ewing sarcoma; neuroblastoma; osteosarcoma; leukaemia; diabetic retinopathy; rheumatoid arthritis; neovascularisation; muscular degeneration; corneal graft rejection; vitamin A deficiency; atopic keratitis; Mycobacteria infection; chemical burn; sarcoid; Kaposi's sarcoma; sickle cell anaemia; carctid obstructive disease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  12-FEB-2001
This sequence is a human type IV collagen alpha chain monomer, designated alphal(IV)NC1. The invention relates to a method for inhibiting angiogenesis, tumour growth or metastases, or endothelial cell interactions with the extracellular matrix, comprising contacting the cells or tissue with a polypeptide composition containing antagonists of specific integrin receptors. The methods and the antagonists are useful for inhibiting angiogenesis, tumour growth or metastases, or endothelial cell interaction with the extracellular matrix. The antagonists are also useful for treating diseases and conditions with accompanying undesired angiogenesis, e.g. solid and blood-borne tumours (e.g. melanomas, carcoinomas, sarcomas, ratinoblastoma, extinoblastoma, Ewing sarcoma, retinoblastoma, osteosarcoma or leukaemia). These are also applicable to treating non-tumourigenic diseases and conditions with accompanying
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           chronic inflammation; psoriasis; therapy; alpha1(IV)NC1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Human alpha1(IV)NC1 protein sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Use of antagonists of specific integrin receptors for inhibiting angiogenesis, tumour growth or metastases, or endothelial cell interactions with the extracellular matrix \dot{}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             31-MAR-2000; 2000WO-US08678
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             12-OCT-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                WO200059532-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          156
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             139
                                                                                                                                                                                                                                                                                                                                                      N-PSDB; A90991.
                                                                                                                                                                                                                                                                                                                                                                                                                                         (BIOS-) BIOSTRATUM INC
                                                                                                                                                                                                                                                    Disclosure; Fig 17a;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             96
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             36
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             19
                                                                                                                                                                                                                                                                                                                                                                                                           3rooks P,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TDIPPCPHGWISLWKGFSFIMFTSAGSBGTGQALASPGSCLEEFRASPFLECHGRGTCNY 198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYISRCTVCEGPAIAIAVHSQT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GEVETRHSQTTAIPSCPEGTVPLYSGFSFLEVQGNQRAHGQDLGTLGSCLQRFTTMPFLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        iqippcpsgwsslwigysfvmhtsagaegsgqalaspgscleefrsapfiechgrgtcny
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IV collagen alpha chain monomer; human; inhibitor; angiogenesis;
                                                                                                                                                                                                                                                                                                                                                                          2000-664962/64.
                                                                                                                                                                                                                                                                                                                                                                                                            Hudson B;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              99US-0127391
                                                                                                                                                                                                                                                    78pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         95
```

```
8888883333
                                                                                            Qy
                                                                                                                               DЬ
                                                                                                                                                            Ωy
                                                                                                                                                                                             Db
                                                                                                                                                                                                                           QΥ
                           δÃ
                                                              B
                                                                                                                                                                                                                                                              Query Match
Best Local S
Matches 161
                                                                                                                                                                                                                                                                                                                                                                          undesired angiogenesis, e.g. diabetic retinopathy, rheumatoid arthritis, retinal neovascularisation, choroidal neovascularisation, muscular degeneration, corneal graft rejection, vitamin A deficiency, atopic keratitis, Mycobacteria infections, chemical burns, Kaposi's sarcoma, stekle cell anaemia, sarcoid, carotid obstructive disease, post-laser complications, chronic inflammation or psoriasis.
                                                                                                                                                                                                                                                                                                                                               Sequence
                             199 YSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCOVCMKK
                                                                                                                                                                                                                                19
                                                                                                                                                                                                                                                            Local Similarity
les 161; Conser
                                                                                                                                96
                                                                                                                                                                79
                                                                                                                                                                                                 36
                                                                                                                                                                                            GEVFTRHSQTTALPSCPEGTVPLYSGFSFLFVQGNQRAHGQDLGTLGSCLQRETTMPFLF 78
||:||||||
||:|||||||
gflvtrhsqtiddpgcpsgtkilyhgysllyvggnerahgqdlgtagsclrkfstmpflf 95
                                                                                                                                              CNVNDVCNFASRNDYSYWLSTDALMPMNMAPITGRALEPYISRCTVCEGPAIAIAVHSQT 138
iqippcpsgwsslwigysfvmhtsagaegsggalaspgscleefrsapflechgrgtcny
                                                                              TDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLEEFRASPFLECHGRGTCNY 198
                                                                                                                           cninnvcnfasrndysywlstpepmpmsmapitgenirpfisrcavceapamvmavhsqt 155
                                                                                                                                                                                                                                                                                                                                                 260 AA;
                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                   70.1%;
                                                                                                                                                                                                                                                                     30;
                                                                                                                                                                                                                                                                                   Score 939; DB 21;
Pred. No. 2.7e-91;
                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                      Length 260;
                                         242
                                                                                                                                                                                                                                                                          Indels
            259
                                                                                                                                                                                                                                                                            ö
                                                                                                                                                                                                                                                                            Gaps
```

0;

Search completed: April 13, 2001, 15:41:17 Job time: 300 sec

THIS PAGE BLANK (USSTO)

OLISH WHYTH JEWY SIHL

Run

```
Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Title:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9:
                       Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1210.5
1210.5
1192
                   339.5

339.5

83.5

83.5

83.5

83.5

83.5

83.5

79.5

79.5

79.5

79.5

70.5

71.5

72.5

72.5

73.5

74.5

72.5

73.5

73.5

74.5

75.5

76.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5

77.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Issued_Patents_AA:*
1: /cgn2_6/ptodata/2,
2: /cgn2_6/ptodata/2,
3: /cgn2_6/ptodata/2,
4: /cgn2_6/ptodata/2,
5: /cgn2_6/ptodata/2,
6: /cgn2_6/ptodata/2,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Match
                                                                                                                            \begin{matrix} \mathsf{w} \\ \mathsf{w} 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 185757 seqs,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BLOSUM62
Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               US-09-543-371-10
1340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 GLKGKRGDSGSPATWTTRGF.....KAGELEKIISRCQVCMKKRH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  April 13, 2001, 15:36:51 ; Search time 31.4 Seconds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GenCore version
Copyright (c) 1993 - 2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /cgn2_6/ptodata/2/iaa/5A_COMB.pep:*
/cgn2_6/ptodata/2/iaa/5B_COMB.pep:*
/cgn2_6/ptodata/2/iaa/6B_COMB.pep:*
/cgn2_6/ptodata/2/iaa/6B_COMB.pep:*
/cgn2_6/ptodata/2/iaa/PCTUS_COMB.pep:*
/cgn2_6/ptodata/2/iaa/PcTUS_COMB.pep:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length
               DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     19210857 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gapext 0.5
       US-08-399-889-24
US-09-167-364-24
US-09-167-364-25
US-09-167-364-25
US-08-494-168-2
US-07-602-804-4
US-07-602-804-4
US-07-602-804-4
US-08-261-577-10
544,9756-4
US-08-261-577-10
544,9756-4
US-08-461-145C-10
US-08-304-141-12
US-08-544-271-30
US-08-644-271-30
US-08-644-271-30
US-09-193-104-12
US-09-193-104-12
US-09-193-104-12
US-07-972-887-34
US-08-057-971-81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     4.5
Compugen Ltd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (without alignments)
149.282 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence 2, Appli
Sequence 4, Appli
Sequence 4, Appli
Sequence 4, Appli
Sequence 10, Appli
Sequence 10, Appli
Sequence 10, Appli
Patent No. 5449756
Sequence 10, Appl
Sequence 10, Appl
Sequence 10, Appl
Sequence 10, Appl
Sequence 2, Appli
Sequence 5, Appli
Sequence 5, Appli
Sequence 1, Appli
Sequence 1, Appli
Sequence 1, Appli
Sequence 1, Appli
Sequence 12, Appli
Sequence 34, Appl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence 24, Appl
Sequence 24, Appl
Sequence 25, Appl
Sequence 25, Appl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Description
       RESULT 2
US-09-167-364-24
                                                                                                                                                           Вb
                                                                                                                                                                                                                             Qy
                                                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                                                                                      Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                           DЪ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DЪ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Š
                                                                                                                                                                                                                                                                                                           407
                                                                                                                                                                                                                                                                                                                                                                                                                                                       347
                                                                                                                                                                                                                                 240
                                                                                                                                                                                                                                                                                                                                                                                     180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               287
```

45	44	43	42	41	40	39	38	37	36	35	34	ω ω	32	31	30	29	28
	69.5		70	70	70	70	70	71	71	71	71	71	71	71	71	71.5	71.5
5.2	5.2		5.2					5. ₃	5. 3	5.3	5.3			5.3			5.3
1333	364	263	574	167	101	101	101	437	329	329	302	302	254	254	254	616	616
4	Ь	ഗ	4	4		۳	μ	w	Ν	Ν	Ν	Ν	4	N	N	س	1
US-09-356-952-2	US-08-318-831-6	PCT-US94-00844-11	US-09-062-440-2	US-09-062-440-9	US-08-057-971-26	US-08-431-412-26	US-07-972-387-26	US-09-073-569-2	US-07-842-165-13	US-08-475-427-13	US-07-842-165-6	US-08-475-427-6	US-08-448-398-3	US-07-842-165-1	US-08-475-427-1	US-08-385-370-4	US-08-385-370-2
					-												
Sequence 2, Appli	Sequence 6, Appli	Sequence 11, Appl	Sequence 2, Appli	Sequence 9, Appli	Sequence 26, Appl	Sequence 26, Appl	٣,	Sequence 2, Appli	Sequence 13, Appl	Sequence 13, Appl	Sequence 6, Appli	Sequence 6, Appli	Sequence 3, Appli	Sequence 1, Appli	Sequence 1, Appli	Sequence 4, Appli	Sequence 2, Appli

ALIGNMENTS

```
; SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 24
; LENGTH: 471
; TYPE: PRT
; ORGANISM: Calf
US-08-399-889-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-08-399-889-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Sim
Matches 221;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GENERAL INFORMATION:
APPLICANT: Reeders, Stephen T
APPLICANT: Morison, Karen E
APPLICANT: Hudson, Billy G
TITLE OF INVENTION: Alpha-3 Chain Type IV Collagen Polypeptides
FILE REFERENCE: 9512636
CURRENT APPLICATION NUMBER: US/08/399,889B
CURRENT FILING DATE: 1995-03-07
EARLIER APPLICATION NUMBER: 07/621091
EARLIER FILING DATE: 1990-11-30
NUMBER OF SEQ ID NOS: 25
COUTUNED: DETORITO VOT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 24, Application US/08399889B Patent No. 5973120
467 MKMR 470
                                                                                                                                                                                                                                                                                                                                                                 227 GLKGKPGDTGPPAAGAVMRGFVFTRHSQTTAIPSCPEGTEPLYSGFSLLFVQGNEQAHGQ 286
                                                                                                                                                                                                                                                                                               60 DLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYI 119
                                                                                                                                                                                                                                                                                                                                                                                       1 GLKGKRGDSGSPATWTT-RGFVFTRHSQTTAIPSCPEGTVPLYSGESFLFVQGNQRAHGQ 59
                                        MKKR 243
                                                                                                               EEFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVC
                                                                                                                                                                                                  SRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCL 179
                                                                                       EEFRASPFIECHGRGTCNYYSNSYSFWLASLDPKRMFRKPIPSTVKAGELENIISRCQVC
                                                                                                                                                                               SRCTVCEGPAIAIAVHSQTTDIPPCPAGWISLWKGFSFIMFTSAGSEGAGQALASPGSCL
                                                                                                                                                                                                                                                                       DLGTLGSCLQRFTTMPFLFCNINDVCNFASRNDYSYWLSTPAMIPMDMAPITGRALEPYI 346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            90.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                            10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 1210.5;
Pred. No. 1.9e
10; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                       .5; DB 2;
1.9e-126;
nes 12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 471;
                                                                                                                                                                                                                                                                                                                                                                                                                                                         1;
                                                                                       466
                                                                                                                                  239
                                                                                                                                                                               406
```

Sequence 2 Patent No.

24, Application US/09167364 5. 6007980

```
Вþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QY
                                                                                                                                                                                                                                                                                                                                                                                                                               Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                               망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Qy
                                                                                                                                                                                                                                                                                                                                               Sn
                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                       ORGANISM: Human
US-08-399-889-25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQ ID NO 24
LENGTH: 471
TYPE: PRT
ORGANISM: Calf
JS-09-167-364-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GENERAL INFORMATION: APPLICANT: Reeders,
                                                                                                  SOFTWARE: PatentIn Ver. 2.0
SEQ ID NO 25
SEQ ID NO 25
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches 221;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CURRENT APPLICATION NUMBER: US/09/167,364
CURRENT FILING DATE: 1998-10-07
EARLIER APPLICATION NUMBER: 08/399889
EARLIER FILING DATE: 1995-03-07
NUMBER OF SEQ ID NOS: 25
SOFTWARE: Patentin Ver. 2.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT: Morrison, Karen E
APPLICANT: Hudson, Billy G
TITLE OF INVENTION: Alpha-3 Chain Type IV Collagen Polypeptides
FILE REFERENCE: 951263B
               Query Match
Best*Local Similarity
 Matches 217;
                                                                                                                                                       CURRENT APPLICATION NUMBER: US/08/399,889B
CURRENT FILING DATE: 1995-03-07
EARLIER APPLICATION NUMBER: 07/621091
EARLIER FILING DATE: 1990-11-30
NUMBER OF SEQ ID NOS: 25
                                                                                                                                                                                                                            APPLICANT: Reeders, Stephen T
APPLICANT: Morrison, Karen E
APPLICANT: Hudson, Billy G
TITLE OF INVENTION: Alpha-3 Chain Type IV Collagen Polypeptides
FILE REFERENCE: 951263A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ery Match
                                                                                                                                                                                                                                                                                                                                            -399-889-25
                                                                                                                                                                                                                                                                                                                                                                                                       467
                                                                                                                                                                                                                                                                                                                                                                                                                                                               40.7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       347
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     227
                                                                                                                                                                                                                                                                                                                  ence 25, Appli
ent No. 5973120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                            SRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCL 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYI 119
                                                                                                                                                                                                                                                                                                                                                                                                       MKMR 470
                                                                                                                                                                                                                                                                                                                                                                                                                                  MKKR 243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SRCTVCEGPAIAIAVHSQTTDIPPCPAGWISLWKGFSFIMFTSAGSEGAGQALASPGSCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DLGTLGSCLQRFTTMPFLFCNINDVCNFASRNDYSYWLSTPAMIPMDMAPITGRALEPYI 346
                                                                                                                                                                                                                                                                                                   INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Reeders, Stephen
                                                                                                                                                                                                                                                                                                                               Application US/08399889B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           90.3%;
               89.0%;
99.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 1210.5;
Pred. No. 1.9
 0;
               Score 1192; DB 2; Pred. No. 7.5e-125;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
 Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             es 12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DB 3;
                            Length 218;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          471;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1;
 0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1;
   0
```

```
8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Вþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 4
US-09-167-364-25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ; ORGANISM: Human
US-09-167-364-25
                                                                                                                                                                                                         Db
                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                            δÃ
                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                     QУ
                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                              RESULT 5
US-08-494-168-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SOFTWARE: PatentIn Ver. 2.0
SEQ ID NO 25
LENGTH: 218
TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GENERAL INFORMATION: APPLICANT: Reeders,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sequence 25, Application US/09167364 Patent No. 6007980
                                                                                                                Sequence 2, Application US/08494168 Patent No. 5731192
                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EARLIER APPLICATION NUMBER: 08/399889
EARLIER FILING DATE: 1995-03-07
NUMBER OF SEQ ID NOS: 25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT: Morrison, Karen E
APPLICANT: Hudson, Billy G
TITLE OF INVENTION: Alpha-3 Chain Type IV Collagen Polypeptides
FILE REFERENCE: 951263B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CURRENT APPLICATION NUMBER: US/09/167,364
CURRENT FILING DATE: 1998-10-07
                                                                                                   GENERAL INFORMATION:
            NUMBER OF SEQUENCES: 1
CORRESPONDENCE ADDRESS:
                                        TITLE OF INVENTION: Collagen COL4A6: Gene, Protein a TITLE OF INVENTION: of Detecting Collagen Deficiency
                                                                      APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              14.7
                                                                                                                                                                                                         181
                                                                                                                                                                                                                                                                 121
                                                                                                                                                                                                                                                                                               147
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    87
                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                         87
                                                                                                                                                                                                                                                                                                                                                                                                                 27
ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GWISLWKGFSFIMFTSAGSEGAGQALASPGSCLEEFRASPFLECHGRGTCNYYSNSYSFW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GWISLWKGFSFIMFTSAGSEGTGOALASPGSCLEEFRASPFLECHGRGTCNYYSNSYSFW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQDLGTLGSCLQRETTMPFLFCNVNDVCN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCN
                                                                                                                                                                                                                     LASLNPERMFRKPIPSTVKAGELEKIISRCQVCMKKRH 244
                                                                                                                                                                                                                                                                                                                        OTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCN 86
                                                                                                                                                                                                                                                                   GWISLWKGFSFIMFTSAGSEGAGQALASPGSCLEEFRASPFLECHGRGTCNYYSNSYSFW
                                                                                                                                                                                                                                                                                 GWISLWKGFSFIMFTSAGSEGTGQALASPGSCLEEFRASPFLECHGRGTCNYYSNSYSFW 206
                                                                                                                                                                                                                                                                                                                                                                                  OTTAIPSCPEGTVPLYSGESFLEVQGNQRAHGQDLGTLGSCLQRETTMPFLECNVNDVCN 60
                                                                                                                                                                                                         LASLNPERMFRKPIPSTVKAGELEKIISRCQVCMKKRH
                                                                                                                                                                                                                                                                                                                                                                                                                                                217;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Reeders, Stephen T
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                       Zhou, Jing
                                                                                    Reeders,
Foley & Lardner
                                                                                                                                                                                                                                                                                                                                                                                                                                                            89.0%;
                                                                                    Stephen T.
                             10
                                                                                                                                                                                                                                                                                                                                                                                                                                                  0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                Pred. No. 7.5e
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 1192; DB 3; Pred. No. 7.5e-125;
                                                                                                                                                                                                            218
                                                         Protein and Method
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 218;
                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9.
                                                                                                                                                                                                                                                                         180
```

COUNTRY:

3000 K Street, N.W.,

Suite 500

Washington, D.C. RY: USA 20007-5109

```
Ş
                                                                                                                                                                                                                                                                                                                                                                                                 В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qy
                                                                                                                                                                                                                                                                                                                       В
                                                                                                                                                                                                                                        US-07-602-824A-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-08-494-168-2
                                                                                                                                                                                               Sequence 4, Application US/07602824A Patent No. 5356804
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
                                                                                                                                                                             GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1492 -- AYCLWRGNTKPTTRTWALLAPVCPASAPCPH-YCNINEVCHYARRNDKSYWLSTTA-- 1546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1438 GLQGPPGFEGAPGQQGPSGCLECLARAEWATRWSTASR-NRCPRVPSGASCGWGT-----
                                     CORRESPONDENCE ADDRESS:
                                                                              TITLE OF INVENTION:
                                                                                              APPLICANT: IOANNOU, YIANNIS A.
TITLE OF INVENTION: CLONING AND EXPRESSION OF BIOLOGICALLY
                                                                                                                                     APPLICANT:
                                                                                                                                                      APPLICANT:
                                                                                                                                                                                                                                                                                                                   1657 FGELPVSETLKAGQLHTRVSRCQVCMNR 1684
                                                                                                                                                                                                                                                                                                                                                                                               1600 PHAHCRWCRGWRQSLVSPGS---SRTFGPLLSSNAVARGTCHYFANKYSFWLTTVEERQQ 1656
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1547 PIPMMPVSQTQIPQYISRCSVCEAPSKPFCAQPGHHHPA-VPP-----GLAQPLDWVLF 1599
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                             NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  104 PMNMAPITGRALEPYISRCTVCEGPA---IAIAVHSQTTDIPPCPHGWISLWKGFSFIMF 160
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                        216 FRK-PIPSTVKAGELEKIISRCOVCMKK 242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OPERATING SYSTEM: PC-DOS/MS-DOS SOFTWARE: Patentin Palana
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NAME: SAXE, Bernhard D. REGISTRATION NUMBER: 28,665 REFERENCE/DOCKET NUMBER: 40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               44 GFSFLFVQGNQRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALM 103
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local Similarity
nes 89; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TYPE: amino acid
TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICATION NUMBER: US 08/112,465 FILING DATE: 27-AUG-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TELEFAX:
    STREET:
                  ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1 GLKGKRGDSGSP-----ATWTTRGFVFTRHSQTTAIP---SCPEGTVPLYS 43
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 LENGTH: 1694 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                    TSA---GSEGTGQALASPGSCLEEFRASPFLECH--GRGTCNYYSNSYSFWLASLNPERM 215
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             904136
2: PENNIE & EDMONDS
1155 Avenue of the Americas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             : (202)672-5300
(202)672-5399
                                                                                                                                   Desnick, Robert J.
Bishop, David F.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PatentIn Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         25.3%;
                                                                            ACTIVE alpha-GALACTOSIDASE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US/08/494,168
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       40397/104/BABR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 339.5; DB 1;
Pred. No. 9.6e-29;
""cmatches 91;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 1694;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels 47;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1491
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      13;
```

```
US-07-602-608-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Вþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-07-602-824A-4
                                                                                                                                                                                                                                                                                                                                                                                                     Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 4,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      INFORMATION FOR SEQ ID NO: 4:
                                                                                                                                                                                                                                                                                                        APPLICANT: Desnick, Rober APPLICANT: Bishop, David APPLICANT: Ioannou, Yiang APPLICANT: Wang, Anne M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NAME: COTUZZÍ, LAUTA A.
REGISTRATION NUMBER: 30,742
REFERENCE,DOCKET NUMBER: 69
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDIUM TYPE: Floppy
                  SOFTWARE: PatentIn Release #1.0, Version #1.25 CURRENT APPLICATION DATA:
                                                                                                       ZIP: 10036
COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SOFTWARE: PatentIn Release #1.0, Version #1.25 CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                    CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                        TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MOLECULE TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                         NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TELLEFAX: (21-
TELEFAX: 66141 F
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             283 SIY-----SQASVIAINQDSNGIP 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 116 EPYISRCTVCEGPAIAIAVHSQTTDIP 142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     228 GQNAGVGG-----WNDLDNLEVGVGNLTDDEEKAHFSMWAMVKSPLIIGANVNNLKASSY 282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            181 GLYG----SGIANSWRMSGDVTAEFTRPD-----SCPDG---YYAGFSIMNILNKAAPM 227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COUNTRY:
ZIP: 100
                                                 MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                          STREET: 1155 Av
CITY: New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: US/07/602,824A FILING DATE: 24-OCT-1990 CLASSIFICATION: 435
 APPLICATION NUMBER:
                                                                                                                                           COUNTRY:
                                                                                                                                                              STATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TYPE: amino acid
STRANDEDNESS: sin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TELEPHONE: (212) 790-9090
TELEFAX: (212) 869-8864/9741
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OPERATING SYSTEM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMPUTER:
                                                                                                                                                                                                                     ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 GLKGKRGDSGSPATWTTRGFV---FTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAH 57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYW--LSTPALMPMNMAPITGRAL 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     10036
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       New York
                                                                                                                                                              New York
                                                                                                                                                                                                                                                                                                                                                                                                                  Application US/07602608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                404 amino acids
                                                                                                                                                                                                  1155 Avenue of the Americas
                                                                                                                                                                                                                                                                                                                       Desnick, Robert J.
Bishop, David F.
Ioannou, Yiannis A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    U.S.A.
                                                                                                                                           U.S.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IBM PC compatible
SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               unknown
                                                                                                                                                                                                                     PENNIE &
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PENNIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            single
                                                                                                                                                                                                                                                                        ACTIVE ALPHA-N-ACETYLGALACTOSAMINIDASE
                                                                                                                                                                                                                                                                                         CLONING AND EXPRESSION OF BIOLOGICALLY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 6.2%; Score 83.5; DI
23.8%; Pred. No. 0.4;
US/07/602,608
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               6923-005
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 404;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  31;
```

7;

ATTORNEY/AGENT INFORMATION:

FILING DATE: 24 CLASSIFICATION:

24-OCT-1990

7;

```
QY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-07-983-451-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        JS-07-602-608-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 4, Apprend Patent No. 5401
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TELEX: 66141 PENNIE INFORMATION FOR SEQ ID NO: 4:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GENERAL INFORMATION:
*TELEFAX: 212-869-8864/9741
TELEX: 66141 PENNIE
INFORMATION FOR SEQ ID NO: 4:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ery Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         REFERENCE/DOCKET NUMBER: 692:
TELECOMMUNICATION INFORMATION:
TELEPHONE: (212) 790-9909
TELEFAX: (212) 869-8864/9741
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                       COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC.compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MOLECULE TYPE: protein
                                                        TELECOMMUNICATION INFORMATION: TELEPHONE: 212-790-9090
                                                                                                                                                 ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: Ioannou, Yiannis A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   181 GLYG----SGIANSWRMSGDVTAEFTRPD-----SCPDG---YYAGFSIMNILNKAAPM 227
                                                                                                                                                                                                                                                                                                                                                                                                                                                       ORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      283 SIY-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       116 EPYISRCTVCEGPAIAIAVHSQTTDIP 142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NAME: Coruzzi, Laura A. REGISTRATION NUMBER: 30,742
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              58 GQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYW--LSTPALMPMNMAPITGRAL 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TYPE: amino acid
STRANDEDNESS: si
                                                                                                                                                                                                                                                                                                                                                                              STREET: 1155 AV
CITY: New York
STATE: New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                       ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 GLKGKRGDSGSPATWTTRGFV----FTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAH 57
                                                                                                               NAME: Coruzzi, Laura A. REGISTRATION NUMBER: 07
                                                                                                                                                                      CLASSIFICATION:
                                                                                                                                                                                                          APPLICATION NUMBER: US/07/983,451
                                                                                                                                                                                                                                                                                                                                                           COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ENGTH:
                                                                                                REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                          FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GQNAGVGG-----WNDLDNLEVGVGNLTDDEEKAHFSMWAMVKSPLIIGANVNNLKASSY 282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             35,
                                                                                                                                                                                                                                                                                                                                           10036
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Application
                                                                                                                                                                                                                                                                                                                                                                                New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                404 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                    1155 Avenue of the Americas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Desnick, Robert
Bishop, David F.
                                                                                                                                                                                                                                                                                                                                                             U.S.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                       PENNIE & EDMONDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -SQASVIAINQDSNGIP 301
                                                                                                                                                                        30-NOV-1992
N: 435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             6.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Cloning and Expression of Biologically Active alpha-Galactosidase A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Robert J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US/07983451
                                                                                                               07/983,451
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            23; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               6923-008
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 83.5; DB 1; Length 404; Pred. No. 0.4;
                                                                                                6923-030
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               31;
```

```
; TOPOLOGY: un; MOLECULE TYPE: US-07-983-451-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              γ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT 9
US-08-261-578-4
; .TOPOLOGY: u
; MOLECULE TYPE:
US-08-261-578-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Patent No. 5491075
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Best Local Similarity Matches 35; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence 4,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GENERAL INFORMATION:
                                                                                                                      INFORMATION FOR SEQ ID NO: 4:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE CHARACTERISTICS
                                                                                                                                                                                                                                       FILING DATE: 24-OCT-1990 ATTORNEY/AGENT INFORMATION: NAME: Coruzzi, Laura A.
                                                                                                                                                                                                                                                                                                                                                                                  SOFTWARE: PatentIn Rel CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                     COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                              CLASSIFICATION: 435
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NUMBER OF SEQUENCES: 2
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                      REFERENCE/DOCKET NUMBER: 69. TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE OF INVENTION: CLONING AND EXPRESSION OF BIOLOGICALLY TITLE OF INVENTION: ACTIVE ALPHA-N-ACETYLGALACTOSAMINIDASE
                                                                                                    SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          228 GONAGVGG-----WNDLDNLEVGVGNLTDDEEKAHFSMWAMVKSPLIIGANVNNLKASSY 282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             181 GLYG----SGIANSWRMSGDVTAEFTRPD-----SCPDG---YYAGFSIMNILNKAAPM 227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          283 SIY-----SQASVIAINQDSNGIP 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           116 EPYISRCTVCEGPAIAIAVHSQTTDIP 142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STATE:
                                                                                                                                                                                                                                                                                              APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                 APPLICATION NUMBER: US/0 FILING DATE: 17-JUN-1994
                                                                                                                                                                                                                                                                                                                                                                                                                    OPERATING SYSTEM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CITY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 GLKGKRGDSGSPATWTTRGFV---FTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAH 57
                                                                                                                                                     TELEFAX:
                                                                                                                                                                                                                          REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                       COMPUTER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ZIP:
                                                 STRANDEDNESS:
                                                                                                                                                                     TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ADDRESSEE:
                                                                                  LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYW--LSTPALMPMNMAPITGRAL 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          10036
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Application US/08261578
                                                                   amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           New York
                                                                                                                                      66141 PENNIE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         404 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           E: PENNIE & EDMONDS
1155 Avenue of the Americas
                                                                                                                                                     : (212) 790-9090
(212) 869-8864/9741
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        U.S.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Wang, Anne M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Bishop, David F.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ioannou, Yiannis A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Desnick,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         unknown
                                                                                                                                                                                                                                                                                                                                                                                                                      IBM PC compatible
SYSTEM: PC-DOS/MS-DOS
                                  unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        single
                protein
                                                   single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6.2%; Score 83.5; D. 23.8%; Pred. No. 0.4; tive 23; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Robert J.
                                                                                                                                                                                                                                                                                                US 07/602,608
                                                                                                                                                                                                                                                                                                                                                                                                      Release #1.0,
                                                                                                                                                                                                                                                                                                                                                                   US/08/261,578
                                                                                                                                                                                                                       30,742
                                                                                                                                                                                                              6923-008
                                                                                                                                                                                                                                                                                                                                                                                                        Version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 404;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels 31;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
```

Query Match Best Local

Local Similarity

6.2%;

Score 83.5; DI Pred. No. 0.4;

DB 1;

Length 404;

```
Š
                                                В
                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ş
                                                                                                                                                                                              US-08-261-577-10
                                                                                                               Matches
                                                                                                                             Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                             INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/261,577
FILING DATE: 17-JUN-1994
                                                                                                                                                                                                                                                                                                                                                     NAME: COTUZZÍ, LAUTA A.
REGISTRATION NUMBER: 30,742
REFERENCE/DOCKET NUMBER: 69
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                          SEQUENCE CHARACTERISTICS
                                                                                                                                                                                                                                                                                                                                                                                                                 ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT: Desnick, Robert J.
APPLICANT: Bishop, David F.
APPLICANT: Ioannou, Yiannis A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           283 SIY-----SQASVIAINQDSNGIP 301
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       116 EPYISRCTVCEGPAIAIAVHSQTTDIP 142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    181 GLYG----SGIANSWRMSGDVTAEFTRPD-----SCPDG---YYAGFSIMNILNKAAPM 227
                                                                                                                                                                                                                                                                                             TELEFAX: (2-
TELEFAX: 66141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        228 GQNAGVGG-----WNDLDNLEVGVGNLTDDEEKAHFSMWAMVKSPLIIGANVNNLKASSY 282
                                              181 GLYG----SGIANSWRMSGDVTAEFTRPD-----SCPDG---YYAGFSIMNILNKAAPM 227
TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CITY: New York
                                                                                                                                                                                                                                                                                                                                                                                                                                     CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STREET:
                                                                  1 GLKGKRGDSGSPATWTTRGFV---FTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAH 57
                                                                                                                                                                                                                                                          LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 GLKGKRGDSGSPATWTTRGFV----FTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAH 57
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               o
.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYW--LSTPALMPMNMAPITGRAL 115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     10036
                                                                                                                                                                                                                                         H: 404 amino acids amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 558075
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 New York
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Application US/08261577
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1155 Avenue of
                                                                                                                                                                                                                                                                                                                       (212) 869-8864
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  USA
                                                                                                               Conservative
                                                                                                                                                                                                                             unknown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pennie & Edmonds
                                                                                                                                                                                                                                                                                                                                        (212)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Floppy disk
                                                                                                                                                                                                                                                                                                          PENNIE
                                                                                                                             6.2%;
                                                                                                                                                                                                                                                                                                                                          790-9090
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Yiannis A.
Cloning and Expression of Biologically
Active alpha-Galactosidase A
                                                                                                                                                                                                                                                                                           10:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 the Americas
                                                                                                            23;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     23;
                                                                                                          Score 83.5; DB Pred. No. 0.4; 23; Mismatches
                                                                                                                                                                                                                                                                                                                                                                        6923-042
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                          DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     58;
                                                                                                              58;
                                                                                                                                            Length 404;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                            Indels
                                                                                                            31;
                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     7;
                                                                                                              7;
```

```
RESULT 1: 5198359-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT 1:
5449756-4
Дb
                                Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QУ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Дb
                                                                                                                                                                  5198359-4
                                                                                                                                                                                                                                                                                   ;Patent No. 5198359
; PATENT NO. 5198359; PATENT NO. 5198359; PATENT NO. 51805; PATENT NO. TAKESHI; DOI, TAKESHI; MIYASAKA, MASAYUKI; TSUDO, MITSURU; KARASUYMA, HAJIME
; TITLE OF INVENTION: RECOMBINANT PROTEIN RECEPTOR FOR IL-2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         5449756-4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT: TANIGUCHI, ;
;SEJIRO;KONO, TAKESHI;DOI, ;
;MITSURU;KARASUYAMA, HAJIME
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ;Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQ ID NO:4:
                                                                                                                                                                                                   SEQ ID NO:4:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity
Matches 48; Conserv
                                                                      Matches
                                                                                        Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICATION NUMBER: US, FILING DATE: 9-JUL-1993 PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NUMBER OF SEQUENCES: 12 CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                         NUMBER OF SEQUENCES: 9
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TITLE OF INVENTION: RECOMBINANT PROTEIN RECEPTOR FOR IL-2
211 VKAQRNNTGTWSPWSQPLTFRTR------PADPMKEILPMSWLRYLLLVLGCFSGFFSC 263
                                                                                                                                                                                                                                                                                                                                                                                                                                                            368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                156 SFIMFTSAGSEGTGQALASPGSCLEE 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     311 -VPLSFFSPSGPA--PEISPLEVLDGDSKAVQLLLLQKDSAPLPSPSGHSQASCFTNQGY 367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         102
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    211 VKAQRNNTGTWSPWSQPLTFRTR-----PADPMKEILPMSWLRYLLLVLGXFSGFFSC 263
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                283 SIY---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   116 EPYISRCTVCEGPAIAIAVHSQTTDIP 142
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     228 GQNAGVGG-----WNDLDNLEVGVGNLTDDEEKAHFSMWAMVKSPLIIGANVNNLKASSY 282
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             264 VYILVKXRYLGPWLKTV--------LKCHIPDPSEFFSQLSSQHGGDLQKWLSSP- 310
                                                                                                                                                                                                                      FILING DATE:
                                                                                                                                                                                                                                           APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  48
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICATION NUMBER: 487,059 FILING DATE: 05-MAR-1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: 865,155 FILING DATE: 08-APR-1992
                                                                                                                                                                                LENGTH: 539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LENGTH: 539
                                2 LKGKRGDSGSPATWTTRGFVFTRHSQTTAIPSCP-EGTVPL---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2 LKGKRGDSGSPATWTTRGFVFTRHSQTTAIPSCP-EGTVPL-----YSG-FSF 47
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LMPMNMAPITGRALEPYISRCTVCEGPAIAIAVHSQTTDIPPCP----HGWISLW--KGF 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LFVQGNQRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASR-----NDYSYWLSTPA 101
                                                                                                                                                                                                                                                                                                                                                                                                                                                              FFFHLPNALEIESCQVYFTYDPCVEE 393
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     5449756
                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                --SQASVIAINQDSNGIP
                                                                                                                                                                                                                      05-MAR-1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              6.2%;
23.3%;
                                                                                        6.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TAKESHI; MIYASAKA,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TADATSUGU; HATAKEYAMA, MASANORI; MINAMOTO,
                                                                                                                                                                                                                                       US/07/487,059
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US/08/88,592
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           35;
                                                                                        Score 81.5;
Pred. No. 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 83.5; DB 6;
Pred. No. 0.6;
5; Mismatches 74;
                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                301
                                                                                                         DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             74;
                                                                    74;
                                                                                                         6;
                                                                                                       Length 539;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 539;
                      Indels
                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             49;
                                                                      49;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                    Gaps
                                                                    10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               10;
```

```
В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                γQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US-08-472-934-10
                                    , MOLECULE TYPE: protein US-08-472-934-10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence 10, Application US/08472934 Patent No. 5753446
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TITLE OF INVENTION: ME
TITLE OF INVENTION: RE
NUMBER OF SEQUENCES: 1
CORRESPONDENCE ADDRESS:
                                                                                                                                                   INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                311 -VPLSFFSBSGPA--PEISPLEVLDGDSKAVQLLLLQKDSAPLPSBSGHSQASCFTNQGY 367
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   264 VYILVKCRYLGPWLKTV------LKCHIPDPSEFFSQLSSQHGGDLQKWLSSP- 310
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRIOR APPLICATION DATA:
APPLICATION NUMBER: 08/3:
FILING DATE: 21-FEB-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  368
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               156 SFIMFTSAGSEGTGQALASPGSCLEE 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRIOR APPLICATION DATA:
APPLICATION NUMBER: US 08/440,421
FILING DATE: 15-May-1995
                                                                                                                                                                                                                                                                                                                               FILING DATE: 14-OCT-
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        48
                                                                                                                                                                                                                                                         FILING DATE: 15-APR-1994
ATTORNEY/AGENT INFORMATION:
NAME: Giulio A. DeConti,
                                                                                                                                                                                                                                                                                                                                                                                 APPLICATION NUMBER: 14-OCT-
PRIOR APPLICATION DATA:
                                                                                                                               SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                   TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ADDRESSEE:
                                                                                                                                                                                                                      REFERENCE/DOCKET NUMBER: 31,
                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICATION NUMBER: US 5 FILING DATE: 15-Apr-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COUNTRY:
                                                                                                                                                                                                                                                                                            APPLICATION NUMBER: PCT/US94/04178 FILING DATE: 15-APR-1994
                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER:
                                                                                                                                                                                     TELEPHONE:
                                                                                 TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LMPMNMAPITGRALEPYISRCTVCEGPAIAIAVHSQTTDIPPCP----HGWISLW--KGF 155
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LFVQGNQRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASR-----NDYSYWLSTPA 101
                                                                                                              LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FFFHLPNALEIESCOVYFTYDPCVEE 393
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Boston
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    02109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Massachusetts
                                                                                              amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       60 State Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   U.S.A.
                                                                                                                  1247 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Lahive and Cockfield
                                                                                                                                                                                          (617)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              06-JUN-1995
                                                                                                                                                                                                                                                                                                                                                                                                       14-0ct-1994
                                                                                                                                                                                                                                                                                                                                                  14-OCT-1994
                                                                                                                                                                      7) 227-7400
227-5941
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          METHOD AND PRODUCT FOR REGULATING CELL RESPONSIVENESS TO EXTERNAL SIGNALS
                                                                                                                                                                                                                                                                                                                                                                                                                      08/323,460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        US 5,405,941
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          08/354,516
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US/08/472,934
                                                                                                                                                                                                                                                                                                                                                                      PCT/US94/11690
                                                                                                                                                                                                                                            31,503
                                                                                                                                                       10:
                                                                                                                                                                                                                           CPI-004DVCP2
                                                                                                                                                                                                                                                             Jr. Esq.
Length 1247;
```

Query Match

5.9%;

Score 79.5;

DB 1;

```
В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RESULT 14
US-08-23-460A-10
US-08-23-460A-10
; Sequence 10, Application US/08323460A
; Patent No. 5854043
; PATENTION:
; GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Вþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                            Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Best Local Similarity 23.0 Matches 54; Conservative
QΥ
                                                                                              Matches
                                                                                                               Best Local
                                                                                                                                                                                                                                                                           INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       727 GTRPRWATQGFDFLQAIEPAFISALPEDDFLSLQALMNECIGHVIGKPHSPVTAIHRNSP 786
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            787 RPVKVPRCHSDPPNPHLIIPTPEGFSTRSVPSDARTHGNSVAAAAAAVRAAATTA-----
                                                                                                                                                                                                                                                                                                                                                                                                          PRIOR APPLICATION DATA:

APPLICATION NUMBER: US 0

APPLICATION 14-APR-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CORRESPONDENCE ADDRESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 893 TEERDEPAYPRSDSSGSTRRSWELRTLISQTKDSASKQGPTEAIQKSVRLFEERR 947
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               139 T---DIPPCPHGWIS-----LWKGFSFIMFT--SAGSEGTGQALASPGSCLEEFR 183
                                                                                                                                                                                                                                                                                                                         REGISTRATION NUMBER: 33,005
REFERENCE/DOCKET NUMBER: 28
REFERENCE/TOOKET NUMBER: 37,005
REGISTRATION UNFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SOFTWARE: Patentin Rel
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                       EILING DATE: 14-APR-1993
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        10 GSPATWTTRGEVETR-----
                                                                                                                                                                                              MOLECULE TYPE:
                                                                                                                                                                                                                                                           SEQUENCE CHARACTERISTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                OPERATING SYSTEM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STREET:
                              727 GTRPRWATQGEDFLQAIEPAFISALPEDDFLSLQALMNECIGHVIGKPHSPVTAIHRNSP 786
                                                                                                                                                                                                                                                                                                                                                                                                                                                    CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICATION NUMBER: US/OFILING DATE: 14-OCT-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ADDRESSEE:
                                                                                                                                                                                                                                                                                                           TELEPHONE:
                                                                10 GSPATWTTRGFVFTR----
   32
                                                                                                                                                                                                                                           LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYISRCT--VCEGPAIAIAVHSQT 138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        -----PSC-----PEGTVPLYSGESFLFVQGNQRAHGQDLGTLGSCLQRFTTMPFLFCN 80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DENVER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ----AGRPGPGGGDSVPA-KPVNTAPDTRGSSVPENDRLASIAAELQFRSLSRHSSP 892
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                80203
                                                                                                               similarity
                                                                                                                                                                                                                            amino acid
                                                                                                                                                                                                                                                                                                                                                                          KOVARIK, JOSEPH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              co
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           E: SHERIDAN ROSS & MCINTOSH
1700 LINCOLN STREET, SUITE 3500
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               USA
                                                                                                                                                                                                                                               1247 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           JOHNSON,
                                                                                                                                                                                                                                                                                            303/863-0223
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                E: Floppy disk
IBM PC compatible
SYSTEM: PC-DOS/MS-DOS
                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                303/863-9700
                                                                                                                                                                                              protein
 -PEGTVPLYSGFSFLFVQGNQRAHGQDLGTLGSCLQRFTTMPFLFCN 80
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           23.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           METHOD AND PRODUCT FOR REGULATING CELL RESPONSIVENESS TO EXTERNAL SIGNALS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GARY L.
                                                                                                                  5.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US/08/323,460A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                         US 08/049,254
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; Pred. No. 5.4; 17; Mismatches
                                                                                                     17;
                                                                                                                                                                                                                                                                                                                                                 2879-1-1
                                                                                                                Score 79.5;
Pred. No. 5.
                                                                                                      Mismatches
                                                                                                                                        DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   , 68
                                                                                                        89;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                      Length 1247;
                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -HSQTTAI----
                                                                           ---HSQTTAI----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   75;
                                                                                                           75;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      31
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           840
                                                                             31
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      9;
```

```
RESULT 15
US-08-461-146C-10
S-98-461-146C-10
Sequence 10, Application US/08461146C
Patent No. 5981265
GENERAL INFORMATION:
                   δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ъ
                                                                                                                                                    US-08-461-146C-10
                                                          Matches
                                                                       Best Local Similarity
                                                                                          Query Match
                                                                                                                                                                                                                                                             TELEFAX: (617) 227-59.
INFORMATION FOR SEQ ID NO:
                                                                                                                                                              TOPOLOGY: linear MOLECULE TYPE: protein
                                                                                                                                                                                                                      SEQUENCE CHARACTERISTICS:
LENGTH: 1247 amino aci
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICATION NUMBER: US 08/049,254 FILING DATE: 15-APR-1993 PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER: US 08/354,516 FILING DATE: 21-FEB-1995 PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                         ATTORNEY/AGENT INFORMATION: NAME: KARA, Catherine J.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FILING DATE: 14-OCT-1
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                  TELECOMMUNICATION INFORMATION: TELEPHONE: (617) 227-7400
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CORRESPONDENCE ADDRESS:
ADDRESSEE: Lahive and Cockfield
                                                                                                                                                                                                                                                                                                                                                                                                                                PRIOR APPLICATION DATA:
APPLICATION NUMBER: PCT/US94/04178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   893
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            139 T---DIPPCPHGWIS-----LWKGFSFIMFT--SAGSEGTGQALASPGSCLEEFR 183
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       841 -----AGRPGPGGGDSVPA-KPVNTAPDTRGSSVPENDRLASIAAELQFRSLSRHSSP 892
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  787 RPVKVPRCHSDPPNPHLIIPTPEGFSTRSVPSDARTHGNSVAAAAAAVRAAATTA----- 840
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            81 VNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYISRCT--VCEGPAIAIAVHSQT 138
10 GSPATWTTRGFVFTR----
                                                                                                                                                                                                                                                                                                                                      REGISTRATION NUMBER: P41,106
REFERENCE/DOCKET NUMBER: CPI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICATION NUMBER: PCT/I
FILING DATE: 14-OCT-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICATION NUMBER: US 08/323,460 FILING DATE: 14-OCT-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICATION NUMBER: FILING DATE: 05-JU
                                                                                                                                                                                                                                                                                                                                                        REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                  FILING DATE: 15-APR-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CITY: Boston
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TEERDEPAYPRSDSSGSTRRSWELRTLISQTKDSASKQGPIEAIQKSVRLFEERR 947
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 02109
                                                                                                                                                                                                     amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Massachusetts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       60 State Street
                                                                                                                                                                                                                        1247 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                JOHNSON,
                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                       Catherine J
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              05-JUN-1995
                                                                                                                                                                                                                                                                              227-5941
                                                                         5.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GARY L.
METHODS FOR REGULATING MEKK PROTEIN ACTIVITY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PCT/US94/11690
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US/08/461,146C
                                                                                                                                                                                                                                                                                                                                      CPI-004CN3
                                                                         Score 79.5;
Pred. No. 5
                                                        Mismatches
                                                                                         DB 2;
                                                        , 88
                                                                                       Length 1247;
                                                      Indels 75;
----HSQTTAI----- 31
                                                      Gaps
                                                      9:
```

```
Qy
                                                                                                                                                                                                                Вр
                                                                                                                                                                                                                                                                  Qy
  В
                                                  Qy
                                                                                                         멍
                                                                                                                                                                                                                                                                                                                            В
893 TEERDEPAYPRSDSSGSTRRSWELRTLISQTKDSASKQGPIEAIQKSVRLFEERR 947
                                                    139
                                                                                                                                                                                                                   787
                                                                                                                                                                                                                                                                                                                       727 GTRPRWATQGFDFLQAIEPAFISALPEDDFLSLQALMNECIGHVIGKPHSPVTAIHRNSP 786
                                                                                                                                                        81 VNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYISRCT--VCEGPAIAIAVHSQT 138
                                                                                                                                                                                                                RPVKVPRCHSDPPNPHLIIPTPEGFSTRSVPSDARTHGNSVAAAAAVRAAATTA----- 840
                                                  T---DIPPCPHGWIS-----LWKGFSFIMFT--SAGSEGTGQALASPGSCLEEFR 183
                                                                                                                                                                                                                                                                  -----PSC-----PEGTVPLYSGFSFLFVQGNQRAHGQDLGTLGSCLQRFTTMPFLFCN 80
                                                                                                      ---AGRPGPGGGDSVPA-KPVNTAPDTRGSSVPENDRLASIAAELQFRSLSRHSSP 892
```

Search completed: April 13, 2001, 15:41:57 Job time: 306 sec

GenCore version 4.5 Copyright (c) 1993 - 2000 Comp

Compugen Ltd

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Run
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Database :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Post-processing: Minimum Match 0%
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Title:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       on:
            118
118
118
118
118
118
118
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              number of hits satisfying chosen parameters:
        1340
1221.5
1221.5
1164
1164
1103
1103
1103
1005
957.5
943.5
939
836
836
834
783.5
783.5
                                                                                                                                                                                                                                                                                                                                                                                                                       Score
          Match Length DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              10:
11:
12:
13:
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SPTREMBL_15:*
1: sp_archea:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        April 13, 2001, 15:40:22; Search time 54.98 Seconds (without alignments) 520.166 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       374700 seqs, 117207915 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US-09-543-371-10
1340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GLKGKRGDSGSPATWTTRGF.....KAGELEKIISRCQVCMKKRH 244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sp_archea:*
sp_bacteria:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     sp_organelle:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sp_mammal:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    sp_phage:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           sp_mhc:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      sp_invertebrate:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             sp_human:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             sp_fungi:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         sp_plant:*
sp_rodent:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                sp_unclassified:*
sp_vertebrate:*
        1669
230
212
212
210
203
203
203
979
253
886
229
275
1752
1758
1759
1800
            \omega \omega \omega \omega
                                                                Q9NYC4
Q61435
1 Q9Q250
1 Q63122
Q28512
Q28512
Q28573
Q28273
Q29032
Q29032
Q29033
Q290436
Q919K3
1 Q919K3
1 Q9NUB7
                                                                                                                                                                                                                                                                                                                                                                                                                         ID
        Q19098
Q19099
Q17163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                374700
028273 canis famil
028682 oryctolagus
029032 sus scrofa
09i9k3 gallus gall
09i9k3 gallus gall
09inc5 homo sapien
09nyc5 homo sapien
028271 canis famil
007265 strongyloce
061430 mus musculu
019098 caenorhabdi
019099 caenorhabdi
019099 caenorhabdi
019163 brugia mala
                                                                                                                                                                                                                                                                                                             Q9nyc4 homo sapien
Q61435 mus musculu
Q9qzs0 mus musculu
Q63122 rattus norv
                                                                                                                                                                                                                                                                         Q28512 macaca mula
Q28567 ovis aries
                                                                                                                                                                                                                                                                                                                                                                                                                       Description
```

45	44	43	42 .	41	40	39	38	37	36	3 5	34	ω ω	32	ω,	30	29	28	27	26	25	24	23	22	21	20
86.5	87	88	90.5	105	110.5	165	198	198	198	465	596	646.5	646.5	649	670	680.5	705	706	710	739	739	739	757.5	767.5	773
6.5	6.5	6.6	6.8	7.8	8.2	12.3	14.8	14.8	14.8	34.7	44.5	48.2	48.2	48.4	50.0	50.8									
356	332	757	2150	29	260	106	97	56	52	1600	854	1940	1761	208	205	202	312	1682	1779	1691	1690	1690	673	1747	179
4	10	4	տ	4	υ	σ	4	4	4	4	ഗ	<u>ர</u>	5	6	6	6	11	11	ഗ	4	4	4	4	ហ	11
043312	Q9LRC4	Q9P237	044131	Q9UDJ9	045993	Q9TS99	Q9UDL1	Q9UDL0	Q9UDK9	Q9UEH6	009238	Q9VMV5	018407	Q29468	Q28274	Q28272	Q64457	Q9QZR9	Q9VMV4	Q9Y4L4	Q9UMG6	Q12823	Q14052	Q26640	P70165
7	Q91rc4 bruguiera g	Q9p237 homo sapien	_		O45993 caenorhabdi	Q9ts99 bos taurus	. Q9udl1 homo sapien	Q9ud10 homo sapien	Q9udk9 homo sapien	Q9ueh6 homo sapien	009238 pseudocorti	Q9vmv5 drosophila	O18407 drosophila	Q29468 canis famil	Q28274 canis famil	Q28272 canis famil	Q64457 mus musculu	Q9qzr9 mus musculu	Q9vmv4 drosophila		Q9umg6 homo sapien		homo	stron	P70165 mus musculu

ALIGNMENTS

														•		-		
Qy	Qy Db	Оy	Db .	Дu Ма	SQ .	DR:	Z Z	R	RA.	RP	R OX	8	86	DE	D I	3 5 5	D CI	RESULT
181 EFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVCM 240	121 RCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGPSFIMFTSAGSEGTGQALASPGSCLE 180 	61 LGTLGSCLQRETTMPELFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYIS 120 	1 GLKGKRGDSGSPATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQD 60 	0uery Match 100.0%; Score 1340; DB 4; Length 245; Best Local Similarity 100.0%; Pred. No. 8.7e-127; Matches 244; Conservative 0; Mismatches 0; Indels 0; Gaps 0;	NON_TER 1 1 SEQUENCE 245 AA; 26952 MW; 1EE5028354D9A57D CRC64;	EMBL; AF258351; AAF72632.1;	T. Biol. Chem. 0:0-0/2000)	"Distinct anti-tumor properties of a type IV collagen domain derived	Ericksen M.D., Hopfer H., Xiao Y., Stillman I.E., Kalluri R.;	FROM N.A.	NCBI_TaxID=9606; [1]	ia; Primates; Catarrhini; Hominidae;	HOMO Sapiens (Human). Eukarvota: Metazoa: Chordata: Craniata: Vertebrata: Euteleostomi:		01-0CT-2000 (TIEMBLIEL. 15, LAST sequence update) 01-0CT-2000 (TIEMBLIEL. 15, LAST annotation update)	(Tremburel. 15, Creat	PRELIMINARY; PRT; 245 AA.	ULT 1

```
QY
                                            망
                                                               Qy
                                                                                        DЬ
                                                                                                        Qγ
                                                                                                                                   Ъ
                                                                                                                                                          δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT
Q61435
 멍
                                                                                                                                                                                뫄
                                                                                                                                                                                                   Qγ
                                                                                                                                                                                                                                                                                    OCC OCC OCC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QУ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      рь
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                  PROSITE;
NON_TER
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         01-NOV-1996
01-NOV-1996
01-MAY-2000
                                                                                                                                                                                                                                                                                                                   INTERPRO; IPR000504; -.
INTERPRO; IPR001442; -.
PFAM; PF01413; C4; 2.
                                                                                                                                                                                                                                                                                                                                                  Submitted (MAY-1996) to the EMBL; Z35166; CAA84529.1; -. MGD; MGI:104688; CO14a3.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Miner J.H., Sanes J.R.;
"Collagen IV alpha 3, alpha 4, and alpha laminae: sequence, distribution, associat developmental switches."

177,470-801/1944)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE=95050957; PubMed=7962065; Miner J.H., Sames J.R.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STRAIN-BALB/C;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COL4A3.

COL4A3.

Mus musculus (Mouse).

Mus musculus (Mouse).

Thervota; Metazoa; Chordata; Metazoa; Rodentia;
                                                                                                                                                                                                                                                                                                                                                                                    STRAIN-BALB/C;
Miner J.H.;
                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                Submitted
                                                                                                                                                                                                                                                                                                                                                                                                                                          Miner J.H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                      STRAIN=BALB/C;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Q61435;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Q61435
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PROCOLLAGEN
242
            MO MKKRH
                                            182
                                                                 180
                                                                                         122
                                                                                                             120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        182
                                                                                                                                                                                                                             Local Sir
hes 222;
                                                                                                                                     62
                                                                                                                                                          60
                                                                                                                                                                                Ν
                                                                                                                                                                                                       ш
                                                                                                                                                                                                                                                   Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           N
MKKRH
                                                                                                SRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCL 179
                                                                                                                                                                                          GLKGKRGDSGSPATWT-TRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KKRH
                                                 EEFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVC
                                                                                                                                DLGTLGSCLQRFTTMPFLFCNINNVCNFASRNDYSYWLSTPALMPMDMAPISGRALEPYI 121
                                                                                                                                             DLGTLGSCLQRETTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYI 119
                                                                                                                                                                             {\tt GLKGNPGDRGTPATGTRMRGFIFTRHSQTTAIPSCPEGTQPLYSGFSLLFVQGNKRAHGQ}
                                         EEFRASPFIECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGDLEKIISRCQVC
                                                                                     SRCTVCEGPAMAIAVHSQTTAIPPCPQDWVSLWKGFSFIMFTSAGSEGAGQALASPGSCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KKRH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVCM 241
                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                                                                      PS00030; RNP_1; UNKNOWN_1.
                                                                                                                                                                                                                                                                                                                                                                                                                               (JUL-1994)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            245
246
                      244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                244
                                                                                                                                                                                                                                                                                  246 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (TrEMBLrel. 01, Created)
(TrEMBLrel. 01, Last sequence update)
(TrEMBLrel. 13, Last annotation update)
TYPE IV, ALPHA 3 (COLLAGEN IV ALPHA 3 C
                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     127:879-891(1994).
                                                                                                                                                                                                                                                                                 26993 MW;
                                                                                                                                                                                                                                     91.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                               ç
                                                                                                                                                                                                                                                                                                                                                                                                                               the
                                                                                                                                                                                                                         Score 1221.5;
Pred. No. 6.9e
11; Mismatches
                                                                                                                                                                                                                                                                                                                                                                       EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                              EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Craniata; Vertebrata; Euteleostomi; Sciurognathi; Muridae; Murinae; Mus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRT;
                                                                                                                                                                                                                                                                                 A9B5434F5836F324 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           association
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         tion with
                                                                                                                                                                                                                                      .9e-115;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AA
                                                                                                                                                                                                                                                DB 11;
                                                                                                                                                                                                                           11;
                                                                                                                                                                                                                                                                                                                                                                                                                              databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         in rodent laminins,
                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CHAIN)
                                                                                                                                                                                                                                               Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    rodent basal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (FRAGMENT).
                                                                                                                                                                                                                         ۲.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         and
                                                                                                                                                                                                                         Gaps
                                                                                    181
                                                                                                                                                                              61
                                                                                                                                                                                                    59
                                          241
                                                                                                                                                                                                                         1;
```

```
RESULT
Q63122
ID Q63122
ID Q6
AC Q6
AC Q6
DT 01
DT 01
DT 01
DT 01
CO R0
CO R0
OC R0
OC Mau
OX NC
                                                                                                                                                                                                                                                                                                                                                                                      Вþ
                                                                                                                                                                                                                                                                                                                                                                                                                                20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Вþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PERSULT

PRESULT

PRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity
Matches 222; Conser
                                                                                                                                       Q63122 PRELIMINARY;
Q63122;
Q1-NOV-1996 (TrEMBLrel. 01, C
Q1-MAY-1999 (TREMBLrel. 10, L
Q1-MAY-2000 (TREMBLREL 13, L
ALPHA-3 TYPE IV COLLAGEN (FRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Q9QZS0;
Q9QZS0;
01-MAY-2000
                                                                                                                                                                                                                                                                                                                                                                                      1665
                                            Rattus norvegicus (Rat).
Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Rodentia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1425
                                                                                                                      COL4A3.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1545
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PROSITE; |
Collagen.
  NCBI_TaxID=10116;
[1]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EMBL; AF169387; AAD50449.1; -.
MGD; MGI:104688; CoL4a3.
INTERPRO; IPR000087; -.
INTERPRO; IPR000504; -.
INTERPRO; IPR001442; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "Insertional mutation of the collagen genes mouse model of alport syndrome."; Genomics 61:113-124(1999).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE=20005934; PubMed=10534397;
Lu W., Phillips C.L., Killen P.D., Hlaing T., Harrison
Elder F.F.B., Miner J.H., Overbeek P.A., Meisler M.H.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1605
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1485
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               01-MAY-2000
01-OCT-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PFAM;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TISSUE-KIDNEY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NCBI_TaxID=10090;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mus musculus (Mouse).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ALPHA 3 COLLAGEN
                                                                                                                                                                                                                                                                                                                                                                                                                                  240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ب
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYI 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GLKGKRGDSGSPATWT-TRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQ
                                                                                                                                                                                                                                                                                                                                                                                      MKKRH
                                                                                                                                                                                                                                                                                                                                                                                                                                MKKRH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EEFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SRCTVCEGPAMAIAVHSQTTAIPPCPQDWVSLWKGFSFIMFTSAGSEGAGQALASPGSCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DLGTLGSCLQRFTTMPFLFCNINNVCNFASRNDYSYWLSTPALMPMDMAPISGRALEPYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GLKGNPGDRGTPATGTRMRGFIFTRHSQTTAIPSCPEGTQPLYSGFSLLFVQGNKRAHGQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EEFRASPFIECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGDLEKIISRCQVC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        222;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PF01413; C4; 2.
TE; PS00030; RNP_1; UNKNOWN_1.
                                                                                                                                                                                                                                                                                                                                                                                      1669
                                                                                                                                                                                                                                                                                                                                                                                                                                  244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1669 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (TrEMBLrel.) (TrEMBLrel.) (TrEMBLrel.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Chordata;
Rodentia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 91.2%;
90.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          161769 MW; 30976E59739A47B2 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               13,
15,
                                                                                                                                         (FRAGMENT).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           11;
                                                                                                                                                                Last sequence update)
Last annotation updat
                                                                                                                                                                                                                 Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 1221.5;
Pred. No. 5.8e
11; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Last
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Last sequence up
                                       Craniata; Vertebrata; | Sciurognathi; Muridae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Craniata; Vertebrata; Euteleostomi; Sciurognathi; Muridae; Murinae; Mus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1669
                                                                                                                                                                                                                                                                  230
                                                                                                                                                                                                                                                                  B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               .8e-114;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ą
                                                                                                                                                             update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       col4a3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       and col4a4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length
                                                                    Euteleostomi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    W.R.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1669;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ۵
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1544
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1484
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ۲.
```

```
В
               δÃ
                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                       Ъ
                                                                                                                                                                                                                                                                                                                                                                                                      Qy
                                                                                                                                                                                                                                                                                                                                                                                                                          뮻
                                                                                                                                                                                                                                                                                                                                                                                                                                           Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RA DR RA DR FT TT
                                                                                                                                                                                                                                                                                                                                                     В
                                 Query Ma
Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                     01-NOV-1996
01-NOV-1996
01-MAY-2000
                                                                                                                                                                                                                                                                                                 Q28512;
Q28512;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NON_TER
NON_TER
SEQUENCE
                                                                                                                                                   TISSUE-RENAL CORTEX;
Turner A.N., Ryan J.J., Derry C.J., Cashman S.
Mason P.J., Pusey C.D.;
Submitted (MAR-1996) to the EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Turner N., Ryan J.J., Derry C.J., Cashman S.J Mason P.J., Pusey C.D.;
Submitted (MAR-1999) to the EMBL/GenBank/DDBJ EMBL; L47281; AAB72238.2;
                                                                                                               EMBL; L47280; AAA91861.1;
INTERPRO; IPRO00504; -.
INTERPRO; IPRO01442; -.
PFAM; PF01413; C4; 2.
                                                                                                                                                                                                                        Eukaryota; Metazoa; Chordata; Mammalia; Eutheria; Primates;
                                                                                                                                                                                                                                   Macaca mulatta (Rhesus
Eukaryota; Metazoa; Cho
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PROSITE; PS00030; RNP_1; UNKNOWN_1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        INTERPRO; IPRO00504; -. INTERPRO; IPRO01442; -.
                                                                                                        PROSITE; PS00030; RNP_1; UNKNOWN_1.
                                                                                                                                                                                        SEQUENCE FROM N.A.
                                                                                                                                                                                                       NCBI_TaxID=9544;
                                                                                                                                                                                                                  Cercopithecinae;
                                                                                                                                                                                                                                                             ALPHA-3 TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PFAM; PF01413; C4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STRAIN-SPRAGUE-DAWLEY; TISSUE-KIDNEY CORTEX;
Turner_N., Ryan J.J., Derry C.J., Cashman S.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                        124
                                                                                                                                                                                                                                                                                                                                                     184
                                                                                                                                                                                                                                                                                                                                                                       198
                                                                                                                                                                                                                                                                                                                                                                                                         138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       18 RGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQDLGTLGSCLQRFTTMPFL
                 \mathfrak{S}_{\mathfrak{S}}
                                            Match
Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                           64
                                                                                                                                                                                                                                                                                                                                                                                                                                            78
                                                                                                                                                                                                                                                                                                                                                                                                                                                             4
                                                                                                                                                                                                                                                                                                                                                    SCPEGTVPLYSGFSFLFVQGNQRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRND
                                                                                                                                                                                                                                                                                                                                                                     YYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVCMKKRH
                                                                                                                                                                                                                                                                                                                                                                                       FCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYISRCTVCEGPAIAIAVHSQ
SCPEGTVPLYSGFSFLFVQGNERAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRND
                                                                                                                                                                                                                                                                                                                                                                                                                                                             RGFIFTRHSQTTANPSCPEGTQPLYSGFSLLFVQGNEHAHGQDLGTLGSCLQRFTTMPFL
                                                                                                                                                                                                                                                                                                                                                                                                                          FCNVDNVCNFASRNDYSYWLSTPAPMPMDMAPITGRALEPYVSRCTVCEGPAMAIAVHSQ
                                    210;
                                                                              212
· 212 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            230
230 AA;
                                                                                                                                                                                                                                                            (TrEMBLrel. 01, Created)
(TrEMBLrel. 01, Last sequence up
(TrEMBLrel. 13, Last annotation
E IV COLLAGEN (FRAGMENT).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                   Conservative
                                                                                                                                                                                                                                                                                                         PRELIMINARY;
                                                                                                                                                                                                                   Macaca.
                                                                               212
23469
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             230
25398
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         86.9%;
91.6%;
                                          86.4%;
99.1%;
                                                                                                                                                                                                                                           macaque)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MW;
                                                                             WW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ; Score 1164; I
; Pred. No. 3.86
11; Mismatches
                                Score 1158; D. Pred. No. 1.4e 1; Mismatches
                                                                                                                                                                                                                         Craniata; V
Catarrhini;
                                                                              4BC574A64E357E64 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             29549E25314CC056 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Cashman S.J.,
                                                                                                                                                                                                                                                                                                         212
                                                                                                                                                                                                                                    Vertebrata;
                                           DB 6;
L.4e-108;
                                                                                                                                                                                                                                                                                                         Ã
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .8e-109;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DВ
                                                                                                                                                                                                                          Cercopithecidae;
                                                                                                                                                                                                                                                                               update)
                                                                                                                                                                                                                                                                     update)
                                                                                                                                                                     .J.,
                                                                                                                                                     databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Katbamna
                                                    Length
                                                                                                                                                                      Katbamna
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length
                                                                                                                                                                                                                                    Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                     230
                                                                                                                                                                                                                                                                                                                                                                      244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  230;
                                  0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                           137
                                                                                                                                                                                                                                                                                                                                                                                                        197
                                                                                                                                                                                                                                                                                                                                                                                                                          123
                                                                                                                                                                                                                                                                                                                                                                                                                                                             63
                                                                                                                                                                                                                                                                                                                                                                                        183
                                  0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0
                                                                                                                                                                                                                                                                             RESULT
Q28273
ID Q2
AC Q2
DT 01
DT 01
DT 01
DT 01
DT 01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Q
                                                                                        멂
                                                                                                       Qy
                                                                                                                          DЬ
                                                                                                                                        QY
                                                                                                                                                            В
                                                                                                                                                                             QΥ
                                                                                                                                                                                               뫄
                                                                                                                                                                                                               δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DЪ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δÃ
                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                           Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      01-NOV-1996
01-NOV-1996
01-MAY-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Q28567
Q28567;
                                                                                                                                                                                                                                                                              NON_TER
NON_TER
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                          Ovis aries
                                                                                                                                                                                                                                                                                                                                                                                                                                                     COL4A3
                                                                                                                                                                                                                                                                                                                                                                                                                                  Eukaryota;
                                                                                                                                                                                                                                                                                                                                                                                                                                                             ALPHA-3 TYPE
                                                                                                                          121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                                                        181
                                                                                                                                           153
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         153
                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             93
                                                                                                                                                                                                                 ω
ω
                                                                                                                                                                              93
                                                                                                                                                                                                \vdash
```

```
SEQUENCE FROM N.A.

SEQUENCE FROM N.A.

TISSUE-RENAL CORTEX;

Turner A.N., Ryan J.J., Derry C.J., Cashman S.

Mason P.J., Pusey C.D.;

Submitted (MAR-1996) to the EMBL/GenBank/DDBJ

"""" "17787: AAA81904.1; -.
Q28273 PRELIMINARY; PRT; Q28273; Q28273; O1-NOV-1996 (TrEMBLrel. 01, Created) O1-NOV-1996 (TrEMBLrel. 01, Last seq 01-MAY-2000 (TrEMBLrel. 13, Last ann COLLAGEN TYPE IV ALPHA 3 CHAIN (FRAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mammalia; Eutheria;
Bovidae; Caprinae;
NCBI_TaxID=9940;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PFAM; PF01413; C4; 2.
PROSITE; PS00030; RNP_1; UNKNOWN_1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               INTERPRO; IPRO00504; -. INTERPRO; IPRO01442; -. PFAM; PF01413; C4; 2.
                                                                                                                                                     YSYWLSTPALMPMNMAPITGRALEPYISRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ERMFRKPIPSTVKAGELEKIISRCQVCMKKRH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ERMFRKPIPSTVKAGELEKIISRCQVCMKKRH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KGFSFIMFTSAGSEGTGQALASPGSCLEEFRASPFLECHGRGTCNYYSNSYSFWLASLNP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KGFSFIMFTSAGSEGTGQALASPGSCLEEFRASPFLECHGRGTCNYYSNSYSFWLASLNP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          YSYWLSTPALMPMNMAPITGRALEPYISRCTYCEAPAIAIAVHSQTTDIPPCPHGWISLW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        YSYWLSTPALMPMNMAPITGRALEPYISRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLW
                                                                                                                                                                                                                                                                                                                                                                                                           Similarity 92.,
95; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        212
212 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Metazoa;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (Sheep).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (TrEMBLrel. 01, Created)
(TrEMBLrel. 01, Last sequence up)
(TrEMBLrel. 13, Last annotation)
IV COLLAGEN (FRAGMENT).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       212
: 23417 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Ovis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Chordata; Craniata; Vertebrata; Euteleostomi; Cetartiodactyla; Ruminantia; Pecora; Bovoidea
                                                                                                                                                                                                                                                                                                                                                                                                                          82.3%;
92.4%;
   CHAIN (FRAGMENT).
                                                                                                                                                                                                                                                                                                                                                                                                           13;
              Last sequence up
                                                                                                                                                                                                                                                                                                                                                                                                        Score 1103; DB 6;
Pred. No. 4.7e-103;
13; Mismatches 3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0F5839FCB81BDD8C
                                                                                                                                                         211
                                                                              210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                212
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             244
                                                                              AΑ
                              update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S.J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                        Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Bovoidea;
                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                   120
                                                                                                                                                                                                                                                                                                              152
                                                                                                                                                                                                                                                                                                                                                                            92
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         212
                                                                                                                                                                                                                     180
                                                                                                                                                                                                                                                                                                                                               60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       152
                                                                                                                                                                                                                                                                                                                                                                                                          0
```

```
RESULT OF THE PROPERTY OF THE 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GA COC CANAL COC CANAL C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local S
Matches 193
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               01-NOV-1996 (01-NOV-1996 (01-NOV-1996 (01-MAY-2000 (01-MAY-2000) (01-MAY-2000 (01-M
                                                                                    PROSITE;
                                                                                                                                                                                                                                                                             TISSUB-RENAL CORTEX;
Turner A.N., Ryan J.J., Derr
Mason P.J., Pusey C.D.;
Submitted (MAR-1996) to the
EMBL; L47283, AAA91893.1; -.
                                                                                                                                                       INTERPRO; IPR000504; -. INTERPRO; IPR001442; -. PFAM; PF01413; C4; 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Eukaryota; Metazoa;
Mammalia; Eutheria;
NCBI_TaxID=9986;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Oryctolagus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COL4A3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       028682
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDLINE=96278820; PubMed=8662866; Thorner P.S., Zheng K., Kalluri R., Jacobs "Coordinate gene expression of the alpha3, of collagen type IV. Evidence from a canine nephritis with a COL485 gene mutation."; J. Biol. Chem. 271:13821-13828(1996).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Canis familiaris (Dog).
Eukaryota; Metazoa; Chordata; C
Mammalia; Eutheria; Carnivora;
                                          NON_TER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ALPHA-3 TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PROSITE; PS00030; RNP_1; UNKNOWN_1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PFAM; PF01413; C4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A. STRAIN-SAMOYED;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NON_TER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NON_TER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           INTERPRO; IPRO00504; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NCBI_TaxID=9615;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    143
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                83
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Local Similarity
nes 193; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            _
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              YSFWLASLNPERMFRKPIPSTVKAGELEKI 232
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TRHSQTTVIPSCPEGTAPLYSGFSLLFIQGNEQAHGQDLGTLGSCLQRFTTMPFLFCNIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    YSFWLASLNPORMFRKPIPSTTKAGELEKI 210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SCPNGWISLWKGFSFIMFTSAGSEGAGQALASPGSCLEEFRASPFIECHGRGTCNYYSNS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLEEFRASPFLECHGRGTCNYYSNS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NVCNFASRNDYSYWLSTPALMPMDMAPITGRALEPYISRCTVCEGPTIAIAIHSQTTDIP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQDLGTLGSCLQRFTTMPFLFCNVN
                                                                                                                     PS00030;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    i (TrEMBLrel. 01
i (TrEMBLrel. 01
) (TrEMBLrel. 13
PE IV COLLAGEN (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         210
210 AA;
    203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             cuniculus (Rabbit)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
AA;
                                                                                                             RNP_1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         210
23025 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Chordata; Cı
Lagomorpha;
    22213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             80.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01,
01,
13,
                                                                                                                                                                                                                                                                                                                                                                                                           Derry
                                                                                                                     UNKNOWN_1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (FRAGMENT).
MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            10;
                                                                                                                                                                                                                                                                                                                               EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Last sequence up
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Craniata; Ver
na; Leporidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 1084;
Pred. No. 3
                                                                                                                                                                                                                                                                                                                                                                                                       С.J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Craniata; Vertebrata; Fissipedia; Canidae;
E14173816E4D9E30 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             31119E4CA823633D CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                           Cashman
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 canine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Vertebrata; Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 6;
3.7e-101;
les 7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              R., Hudson
alpha4, and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Oryctolagus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 alpha4, and alpha5 model of x-linked
                                                                                                                                                                                                                                                                                                                                                                                                       S.J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               update)
                                                                                                                                                                                                                                                                                                                           databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 210;
                                                                                                                                                                                                                                                                                                                                                                                                           Katbamna
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Euteleostomi;
Canis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 B.G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  alpha5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       chains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
```

```
δÃ
                                      밁
                                                        2
                                                                             Вþ
                                                                                              QУ
                                                                                                                   Дb
                                                                                                                                     Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT
Q29032
 ₽
                                                                                                                                                                                                         QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      γg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Qy
                                                                                                                                                          Matches
                                                                                                                                                                  Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                     Q29032;
Q29032;
Q1-NOV-1996
Q1-NOV-1996
Q1-MAY-2000
                                                                                                                                                                                                                 NON_TER
                                                                                                                                                                                                                                            INTERPRO; IPRO00504; -.
INTERPRO; IPRO01442; -.
PFAM; PF01413; C4; 2.
                                                                                                                                                                                                                                                       INTERPRO;
INTERPRO;
                                                                                                                                                                                                                                                                                   TISSUE=RENAL CORTEX;
Turner A.N., Ryan J.J.,
Mason P.J., Pusey C.D.;
Submitted (MAR-1996) to
                                                                                                                                                                                                                                                                                                                                                       Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                                                          EMBL; L47284; AAA91882.1;
                                                                                                                                                                                                                                                                                                                                                                            Sus scrofa (Pig).
                                                                                                                                                                                                                                                                                                                                                                                    COL4A3
                                                                                                                                                                                                                                                                                                                                                                                              ALPHA-3 TYPE IV COLLAGEN (FRAGMENT)
                                                                                                                                                                                                         SEQUENCE
                                                                                                                                                                                                                                    PROSITE;
                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                              NCBI_TaxID=9823;
                  213
                                      121
                                                          153
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     121
181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        153
                                                                             61
                                                                                                93
                                                                                                                                       \omega
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             93
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    \frac{\omega}{\omega}
                                                                                                                   \vdash
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                <u>--</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9
           ERMFRKPIPSTVKAGELEKIISR
                                                                          SCPEGTVPLYSGFSFLFVQGNQRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRND
                                               KGFSFIMFTSAGSEGTGQALASPGSCLEEFRASPFLECHGRGTCNYYSNSYSFWLASLNP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QRMFRKPIPSTVKAGELEKIISR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ERMFRKPIPSTVKAGELEKIISR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   YSYWLSTPALMPMNMAPITGRALEPYISRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SCPEGTVPLYSGFSFLFVQGNQRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRND
ERMFRKPIPSTVKAGELEKIISR
                                                                                                                   SCPEGTVPLYSGFSLLFVQGNERSHGQDLGTLGSCLQRFTTMPFLFCNINDVCNFASRND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     KGFSFIMFTSAGSEGAGQALASPGSCLEEFRANPVLECHGRGTCNYYSNSYSFWLASLNP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              KGFSFIMFTSAGSEGTGQALASPGSCLEEFRASPFLECHGRGTCNYYSNSYSFWLASLNP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         YSYWLSTPALMPMDMAPITGKALEPYISRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLW
                                     KGFSFIMFTSAGSEGAGQALASPGSCLEKFRASPFIECHGRGTCNYYSNSYSFWLASLDP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SCPEGTVPLYSGFSLLFVQGNEQAHGQDLGTLGSCLQRFTTMPFLFCNINDVCNFASRND
                                                                                                                                                         189;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     193;
                                                                                                                                                                                                                                  PS00030; RNP_1; UNKNOWN_1
                                                                                                                                                                                                        203
203 i
                                                                                                                                                                                                                                                                                                                                                                                                      (TrEMBLrel.
                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                           (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                               PRELIMINARY;
                                                                                                                                                                                                         AA;
                                                                                                                                                                                                       203
22326
                                                                                                                                                                                                                                                                                                                                                       Chordata; Craniata; Vertebrata; Cetartiodactyla; Suina; Suidae;
                                                                                                                                                                  78.7%;
93.1%;
                                                                                                                                                                                                                                                                                    to the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               80.0%;
                                                                                                                                                                                                                                                                                                                                                                                                        13,
                                                                                                                                                                                                                                                                                                                                                                                                                 01,
                                                                                                                                                                                                                                                                                                      Derry
                                                                                                                                                                                                        MW;
                                                                                                                                                                                                                                                                                                                                                                                                      Last sequence up
                                                                                                                                                        9;
                                                                                                                                                                                                                                                                                    EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                           Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score
Pred.
203
                                                                                                                                                                  Score 1055;
Pred. No. 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 235
                                                                                                                                                                                                                                                                                                      с.J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                               PRT;
                                                                                                                                                                                                        E3B20E32D9A245AA CRC64;
                                                                                                                                                       Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1072;
No. 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               No.
                                                                                                                                                                                                                                                                                                        Cashman
                                                                                                                                                                                                                                                                                                                                                                                                                                               203
                                                                                                                                                                  .9e-98;
                                                                                                                                                                                                                                                                                                                                                                                                                                              AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .8e-100;
                                                                                                                                                                            DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ВВ
                                                                                                                                                                                                                                                                                                                                                                                                                 update)
                                                                                                                                                                                                                                                                                                        ໝ
                                                                                                                                                                           6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         6;
                                                                                                                                                        5
                                                                                                                                                                                                                                                                                    databases
                                                                                                                                                                          Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length
                                                                                                                                                                                                                                                                                                        Katbamna
                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                 Euteleostomi;
                                                                                                                                                                            203;
                                                                                                                                                        0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                               152
                                                                                                                  60
                                                        212
                                                                           120
                                                                                                                                     92
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            152
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  92
                                     180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      212
                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
```

```
DRRITT DRRIVE
                                                                                                                                                                                                                                                                                                                  ρ
                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                           δ
                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                        Š
                                                                                                                                                                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q919K
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local S
Matches 167
        MEDLINE-95050957; PubMed=7962065; Miner J.H., Sanes J.R.; Miner J.H., Sanes J.R.; alpha 4, and "Collagen IV alpha 3, alpha 4, and laminae: sequence, distribution, as developmental switches."; J. Cell Biol. 127:879-891(1994). EMBL; Z35168; CCA84531.1; -. MGD; MGI:88456; CCl4a5.
                                                                                                                                                                                             01-NOV-1996
01-NOV-1996
01-JUN-2000
                                                                                                                                                                                                                                                    1T
                                                                                                                                                                                                                             Q61436
Q61436;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EMBL; AI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0919K3 PRELIMINARY; PRT; 979 AA. 0919K3; 01-OCT-2000 (TrEMBLrel. 15, Last sequence up 01-OCT-2000 (TrEMBLrel. 15, Last annotation COLLAGEN IV Al CHAIN (FRAGMENT).
                                                                                                SEQUENCE FROM N.A.
TISSUE=MUSCLE;
                                                                                                                                         Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Halfter W.M., Dong S.; "Composition, synthesis basal lamina.";
                                                                                                                                                            Mus musculus (Mouse)
                                                                                                                                                                          COL4A5
                                                                                                                                                                                   PROCOLLAGEN,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Dev. Biol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NCBI_TaxID=9031;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Eukaryota; Metazoa; Chordata; Craniata; Vert
Archosauria; Aves; Neognathae; Galliformes;
                                                                                                                                                                                                                                                                                                970
                                                                                                                                                                                                                                                                                                                                          910
                                                                                                                                                                                                                                                                                                                                                                174
                                                                                                                                                                                                                                                                                                                                                                                      850
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         730
                                                                                                                                                                                                                                                                                                                                                                                                                                790
                                                                                                                                                                                                                                                                                                                                                                                                                                                     54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Н
                                                                                                                                                                                                                                                                                                                    SRCQVCMK
                                                                                                                                                                                                                                                                                                                                        | QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GLKGKRGDSGSP-----ATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGN 53
                                                                                                                                                                                                                                                                                                SRCQVCMR
                                                                                                                                                                                                                                                                                                                                                                                     SIRPFISRCSVCEAPAMVIAVHSQTIQIPPCPEGWSSLWIGYSFVMHTSAGAEGSGQALA
                                                                                                                                                                                                                                                                                                                                                                                                                                ERAHGQDLGTAGSCLRKFSTMPFLFCNINNVCNFASRNDYSYWLSTPEPMPMSMAPITGE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GIPGPPGPEGLPGAMGPPGAASVAHGFLVTRHSQTTEEPQCPFGTRLIYHGYSLLYVQGN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Biol. 0:0-0(2000)
AF239838; AAF446
ER 1 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  tch 71.5%; al Similarity 67.3%; 167; Conservative 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    gallus (Chicken).
IPR000087;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         979 AA;
                                                                                                                                                                                  (TTEMBLrel. 01, Created)
(TTEMBLrel. 01, Last sequence update)
(TTEMBLrel. 14, Last annotation update)
, TYPE IV, ALPHA 5 (COLLAGEN IV ALPHA 5
                                                                                                                                                                                                                                         PRELIMINARY;
                                                                                                                                                                                                                                                                                                977
                                                                                                                                                                                                                                                                                                                    241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAF44681.1;
                                                                                                                                         Chordata;
Rodentia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         95020
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     33;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              assembly
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 957.5; DE Pred. No. 1e-87; 3; Mismatches
                                                                                                                                        Craniata; Vert
Sciurognathi;
                                                     and alpha 5 chains
n, association with
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5B1017D911ED4299
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              of the
                                                                                                                                                                                                                                         253
                                                                                                                                                    Vertebrata;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Vertebrata; Euteleostomi; mes; Phasianidae; Phasiani
                                                                5
                                                                                                                                                                                                                                         A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DВ
                                                                                                                                          Muridae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              embryonic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CRC64;
                                                     in roc
lamini
                                                                                                                                                                                  CHAIN) (FRAGMENT)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length
                                                                                                                                                    Euteleostomi;
                                                     rodent
minins,
                                                                                                                                         Murinae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              chick retinal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Phasianinae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        979;
                                                    basal
and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  7;
                                                                                                                                        Mus
                                                                                                                                                                                                                                                                                                                                                                                                                                849
                                                                                                                                                                                                                                                                                                                                                                                     .909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ۲,
```

```
RESULT
Q9NUB7
 밁
                 Qy
                                        D
                                                             ОĀ
                                                                                  밁
                                                                                                    ρy
                                                                                                                            DЬ
                                                                                                                                                                                                                        g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    QУ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DR
FT
SQ
                                                                                                                                                                              Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local
                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                   QNUB7;
Q1-QCT-2000 (TrEMBLre)
Q1-QCT-2000 (TrEMBLre)
Q1-QCT-2000 (TrEMBLre)
Q1-QCT-2000 (TrEMBLre)
DA24A23.1 (COLLAGEN,
CQL4A5
                                                                                                                                                                                                                      Collagen.
NON_TER
SEQUENCE
                                                                                                                                                                                                                                                                                                            A24:...
COL4A5.
Homo sapiens (Human).
Homo sapiens (Human).
Horia; Metazoa; Chordata;
Horia; Primates;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PFAM; PF01413; C4;
NON_TER 1
SEQUENCE 253 AA;
                                                                                                                                                                                                                                                                Submitted
                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A. Cobley V.;
                                                                                                                                                                                                                                                                                                           NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                                                                                                                                                    Q9NUB7
                                                                                                                                                                                                                                                      EMBL; AL035425;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           INTERPRO;
                                                                                                                            643
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           130
 823
                    180
                                         763
                                                             120
                                                                                  703
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          250
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               120
                                                                                                       60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            10
                                                                                                                                      1 GLKGKRGDSGSPATWT-TRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQ 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MKR:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MKK
                                      GPDGLQGPPGTPSVAHGFLITRHSQTTDAPQCPQGTLQVYEGFSLLYVQGNKRAHGQ 702
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCL 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYI 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GPDGLQGPPGPPGTTSVAHGFLITRHSQTTEAPQCPRGTVHIYEGFSLLYVQGNKRAHGQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GLKGKRGDSGSPATWT-TRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQ
           EEFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EEFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SRCAVCEAPAVVIAVHSQTIQIPHCPQGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMNMEPLKGQSIQPFI
EEFRSAPFIECHGRGTCNYYANSYSFWLATVDVSDMFSKPQSETLKAGDLRTRISRCQVC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EEFRSAPFIECHGRGTCNYYANSYSFWLATVDMSDMFNKPQSETLKAGDLRTRISRCQVC
                                                                                                                                                                     165;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     al Similarity 68.7
167; Conservative
                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IPR001442;
                                                                                                                                                                                                                                                                (FEB-2000)
                                                                                                                                                                                                                        886
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           253 AA;
                                                                                                                                                                                                                                                                                                                                                             (TremBLrel. 15, Created)
(TremBLrel. 15, Last sequence up
(TremBLrel. 15, Last annotation
COLLAGEN, TYPE IV, ALPHA 5 (ALPOR
                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                      PRELIMINARY;
                                                                                                                                                                                                                        AA;
                                                                                                                                                                                                                                                      2000) to the 
CAB90289.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2
                                                                                                                                                                                                                       85478 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           27626 MW;
                                                                                                                                                                              70.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 71.18; 68.78;
                                                                                                                                                                    35;
                                                                                                                                                                                                                                                                EMBL/GenBank/DDBJ databases
                                                                                                                                                                            Score
Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 952.5; DB 1
Pred. No. 7.4e-88;
2; Mismatches 43
                                                                                                                                                                                                                                                                                                                     Craniata; Vertebrata; Catarrhini; Hominidae
                                                                                                                                                                                                                                                                                                                                                                                                                      PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           33DAA199CA59FA91 CRC64;
                                                                                                                                                                                                                        8C06B9FCA9AA6569
                                                                                                                                                                    Mismatches
                                                                                                                                                                              943.5;
No. 2.4
                                                                                                                                                                                                                                                                                                                                                                                                                      886
                                                                                                                                                                                                                                                                                                                                                              ence update)
tation update)
(ALPORT SYNDROME)) (FRAGMENT)
                                                                                                                                                                                                                                                                                                                                                                                                                      A
                                                                                                                                                                               4e-86;
                                                                                                                                                                                                                                                                                                                       Hominidae;
                                                                                                                                                                                       DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB 11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       43;
                                                                                                                                                                    42;
                                                                                                                                                                                                                        CRC64;
                                                                                                                                                                                      Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                                                                                                                                                                                                                Euteleostomi
                                                                                                                                                                                         886;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1;
                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                             179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    129
                                         822
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          189
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 59
882
                    239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 249
                                                                                                                                                                    1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       بر
```

240 MKK

```
RESULT CONTROL OF THE PROPERTY OF THE PROPERTY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ROCC OCC DIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT
Q9NYC5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                    Q28271 PRELIMINARY; PRT; 225 AA. Q28271; 01-NOV-1996 (TrEMBLrel. 01, Created) 01-NOV-1996 (TrEMBLrel. 01, Last sequence update) 01-MAY-2000 (TrEMBLrel. 13, Last annotation update) COLLAGEN TYPE IV ALPHA 1 CHAIN (FRAGMENT).
                                                                                                                                                                                                              Canis familiaris (Dog).
Canis familiaris (Dog).
Eukaryota; Metazoa; Chordata; (
Mammalia; Eutheria; Carnivora;
Thorner P.S., Zheng K., Kalluri R., Jacobs R., Hudson B.G.; "Coordinate gene expression of the alpha3, alpha4, and alpha5 of collagen type IV. Evidence from a canine model of X-linked nephritis with a COL4A5 gene mutation.";
                                                                         MEDLINE=96278820;
Thorner P.S., Zher
                                                                                                                              STRAIN-SAMOYED;
                                                                                                                                                                                               Eukaryota; Metazoa;
Mammalia; Eutheria;
NCBI_TaxID=9615;
                                                                                                                                                                                                                                                                                               COL4A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NON_TER
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.

COLORAGO P.C., Torre A., Kamphaus G.D., Maeshima Y.,
Takahashi K., Volk R., Zamborsky E.D., Herman S., Sar
Ericksen M.B., Dhanabal M., Simons M., Post M., Kufe
Weichselbaum R.R., Sukhatme V.P., Kalluri R.,
"Anti-angiogenic cues from vascular basement membrane
Cancer Res. 0:0-0(2000).
                                                                                                                                                  SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Primates;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-0CT-2000 (TrEMBLrel.
01-0CT-2000 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Q9NYC5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ARRESTEN (FRAGMENT)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-OCT-2000
01-OCT-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Q9NYC5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          883
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      v
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       YSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVCMKK 242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      TDIPPCPHGWISLWKGFSFIMFTSAGSEGTGOALASPGSCLEEFRASPFLECHGRGTCNY 198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CNINNVCNFASRNDYSYWLSTPEPMPMSMAPITGENIRPFISRCAVCEAPAMVMAVHSQT 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQDLGTLGSCLQRFTTMPFLF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       YANAYSFWLATIERSEMFKKPTPSTLKAGELRTHVSRCQVCMRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IQIPPCPSGWSSLWIGYSFVMHTSAGAEGSGQALASPGSCLEEFRSAPFIECHGRGTCNY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYISRCTVCEGPATAIAVHSQT 138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GFLVTRHSQTIDDPQCPSGTKILYHGYSLLYVQGNERAHGQDLGTAGSCLRKFSTMPFLF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MKR:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            161;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AF258349; AAF72630.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          885
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (Human).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AA;
                                                                                               PubMed=8662866;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           25331 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              70.18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   15,
15,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Created)
Last sequence
Last annotation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 939; DB Pred. No. 1.5e 30; Mismatches
                                                                                                                                                                                                              Craniata; Vertebrata;
; Fissipedia; Canidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Craniata; Vertebrata; | Catarrhini; Hominidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9693CDC100A5C1D5 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 annotation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 229
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Maeshima Y., Hopfer H.
Herman S., Sarkar P.K.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB 4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    membrane collagen.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 229;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                 Euteleostomi;
Canis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      D.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Η.,
                                             chains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0,
```

```
Ω
                                                                                                                                                        Б
                                                 В
                                                                     QY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT
Q07265
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Вþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              В
                                                                                             Query Match
Best Local S
Matches 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DR DR FT FT SQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local S
                                                                                                                                                 INTERPRO; IPR000087; -.
INTERPRO; IPR001442; -.
PFAM; PF01391; Collagen; 22.
PFAM; PF01413; C4; 2.
PRODOM; PD003923; -; 2.
Extracellular matrix; Collagen.
SEQUENCE 1752 AA; 170210 MW;
                                                  1512
                                                                                                                                                                                                                                                                                                                                                                                                             Q07265
Q07265;
Q1-NOV-1996
Q1-NOV-1996
Q1-YUN-2000
1570 LGKPGSCLKRFSTMPFLFCNINNVCHVASRNDYSYWLSTTEPMPMNMAPIRGGQLQPFIS
                                                                                                                                                                                                                               SEQUENCE FROM N.A.

MEDLINE-93186842; PubMed-8444899;
EXPOSITE J.Y., D'ALESSIO M., DI Liberto M., R
"Complete primary structure of a sea urchin t
chain and analysis of the 5' end of its gene.
J. Biol. Chem. 268:5249-5254(1993).

EMBL; L02917; AAA330039.1; -.
                                                                                                                                                                                                                                                                                                                                                              Strongylocentrotus purpuratus (Purple sea urchin).
Eukaryota; Metazoa; Echinodermata; Eleutherozoa; F
                                                                                                                                                                                                                                                                                                                                           Strongylocentrotus
                                                                                                                                                                                                                                                                                                                                                     Eukaryota; Metazoa; Echino
Echinoidea; Euechinoidea;
                                                                                                                                                                                                                                                                                                                                                                                                 01-NOV-1996 (TrEMBLrel. 01, Creat
01-NOV-1996 (TrEMBLrel. 01, Last
01-JUN-2000 (TrEMBLrel. 14, Last
PROCOLLAGEN ALPHA 1(III) CHAIN.
                                                                                                                                                                                                                                                                                                                                NCBI_TaxID=7668;
                                                                                                                                                                                                                                                                                                                                                                                         COLP3ALPHA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NON_TER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       J. Biol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   INTERPRO; IPR001442; PFAM; PF01413; C4; 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           J. Biol. Chem. 271:13821-13828(1996).
EMBL; U50933; AAC48583.1; -:
                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        127
                                                                                            Local Similarity
mes 145; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      7
                                                       GLKGKRGDSGSPATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQD
                    LGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYIS 120
                                                GFPGTKGEAGIPG-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FIECHGRGTCNYYANAYSFWLATIERSEMFKKPTPSTLEAGEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLEEFRASP 186
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CLORFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYISRCTYCE 126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GDSGSPÄTWTTRGEVETRHSQTTAIPSCPEGTVPLYSGESFLEVQGNQRAHGQDLGTLGS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APAMYMAVHSQTIQIPQCPSGWSSLWIGYSFVMHTSAGAEGSGQALASPGSCLEEFRSAP 178
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GPPGTPS--VVHGFLVTRHSQTTDDPQCPPGTKILYHGYSLLYVQGNERAHGQDLGTAGS 58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           155;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity 69.55; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   225
225 t
                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AA;
                                           -SSSGFFITRHSQTTSIPQCPQGTAKMWHGYSLLFVQGNERGHGQD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 225
24586
                                                                                                      62.4%;
59.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .58;
                                                                                                                                                                                                                                                                                                                                                     Echinacea;
                                                                                            37;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         30;
                                                                                                                                                                                                                                                                                                                                                                                                                                   Created)
                                                                                           Pred. No. 3.207; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 889; DB
Pred. No. 1.5e
30; Mismatches
                                                                                                     Score 836;
Pred. No. 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                2196455890416E47
                                                                                                                                                   1AE5AAA21569346D
                                                                                                                                                                                                                                                                                                                                                                                                           sequence update) annotation updat
                                                                                                                                                                                                                                                                                                                                                   Echinoida; Strongylocentrotidae;
                                                                                          DB 5;
1.2e-75;
les 59;
                                                                                                                                                                                                                                                                                                                                                                                                                                                         AΑ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 6;
                                                                                                                                                                                                                                                                    Ramirez
type IV
                                                                                                                                                                                                                                                           type
e.";
                                                                                                                Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CRC64;
                                                                                                                                                                                                                                                                                                                                                               Echinozoa;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Length 225
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                221
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       229
                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                Ŧ.
                                                                                                                                                                                                                                                                  collagen
                                                                                        2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2;
                                                                                                                                                                                                                                                                    alpha
                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                             1569
 1629
                                                                   60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               66
                                                                                        1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1;
```

Search completed: April 13, 2001, 15:45:37 Job time: 315 sec

THIS PAGE BLANK (USPTO)

```
Title:
Perfect score:
Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Run
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Minimum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Maximum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OM protein - protein search, using sw model
           on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         number
                                                                                                                                                                                                                                                              1210.5
960
951
943.5
942.5
845.5
776.5
7772.5
760.5
760.6
98.5
98.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score
         79
78
77.5
77.5
77
77
77
76.5
                                                                                                                                                                                                        80
79.5
79
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     length: 0
length: 2000000000
         Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    US-09-543-371-10
1340
1 GLKGKRGDSGSPATWTTRGF.....KAGELEKIISRCQVCMKKRH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          April 13, 2001, 15:41:27; Search time 20.87 Seconds (without alignments) 400.495 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SwissProt_39:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                93435 seqs, 34255486 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GenCore version 4.5 Copyright (c) 1993 - 2000 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length
    DВ
                      CA34_HUMAN
CA14_HOWAN
CA14_HOWAN
CA14_HOWAN
CA54_CANFA
CA14_CAEEL
CA24_CAEEL
CA24_RCSU
CA24_CAEEL
CA24_HUMAN
CA64_HUMAN
CA64_HOWAN
CA64_HOWAN
CA64_HUMAN
CA64_HUMAN
CA64_HUMAN
CA64_HUMAN
CA64_HUMAN
CA64_HUMAN
CA64_HUMAN
CA64_HUMAN
CA14_DROME
CA71_SCHPO
PGBM_HUMAN
CA14_DROME
CA71_SCHPO
PGBM_MOUSE
GCNT_SCHPO
PGBM_MOUSE
GF63_LEICH
MOUSE
GF63_LEICH
MOUSE
GF63_LEICH
MOUSE
GF63_LEICH
MOUSE
GF63_LEICH
MOUSE
GF63_LEICH
MOUSE
GCST_MOUSE
GF63_LEICH
MOUSE
GCST_MOUSE
GCS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q01955 homo sapien
Q28084 bos taurus
P02462 homo sapien
P02463 mus musculu
  Q05793
Q043312
P162917
P15706
C008648
Q04592
P01105
Q90404
C075694
C07
                                                                                                                                                                                                                                                                                                                                  P07657
P98160
                                                                                                                                                                                                                                                                                                                                                                                                P08122
P08572
Q14031
Q29442
P55787
P53420
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Description
                                                                                                                                                                                                                                       2 mus musculu
2 homo sapien
1 homo sapien
2 bos taurus
7 oryctolagus
6 homo sapien
0 drosophila
7 schizosacch
10 homo sapien
3 mus musculu
2 homo sapien
7 mus musculu
6 leishmania
2 mus musculu
5 avian leuke
4 discopyge o
4 homo sapien
3 ephydatia m
1 nitrosomona
5 drosophila
7 salmonella
2 homo sapien
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          homo sapien
canis famil
caenorhabdi
                                                                                                                                                                                                 mus musculu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ascaris suu
caenorhabdi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           244
```

REBRERRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRRR	
SULT 1 CA34_HUMAN CA34_HUMAN CA34_H CA34_H CA34_H CA34_H OD1955 O1-OCT O1-OCT O1-OCT O1-OCT COLLAG COLLAG	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
r-1996 r-1999 r-2999 r-2099 r-	76.5 76.5 76.5 75.5 75.5 74.5 74.7 74.7 74.7
AN STANDARD 996 (Rel. 34, C 9999 (Rel. 38, I 0000 (Rel. 40, I ALPHA 3(IV) CH diens (Human). 1000 (Rel. 40, I ALPHA 3(IV) CH diens (Human). 2000 (Rel. 40, I ALPHA 3(IV) CH diens (Human). 2000 (Rel. 40, I 2000 (R	5.555555555555555555555555555555555555
ARD; Cre Chori Chori Chori Chori Prime Pri	770 783 379 379 141 191 195 909 525 610 312 375
Treated Jreated Jreated Jreated Jast am Jast a	
prT; ated) t sequence t annotatio N preCURSOR N preCURSOR n preCURSOR precipitation n preCURSOR n preCURSOR n preCURSOR n precipitation n precipitation n n n n n n n n n n n n n n n n n n n	PCK7_ PCK7_ PCK7_ CA1A_ CA1A_ PCK7_ Y297_ AGRI_ AD12_ NU62_ LKHA_ F3ST_ DNAJ_ AA
nupdate) nupdate) nupdate) nupdate) nupdate) T., Tryggvason K T., Tryggvason K numan alpha 4(IV) coll Alpha 4(IV) coll M., Elena S.F., alpha 3(IV) gene Identification /NC1 domain junc	MOUSE RAT LEGPN CCHICK CHICK HUMAN HUMAN HUMAN HUMAN CRAT CAVPO FLABI ECOLI ECOLI
	061139 062849 p50025 P00125 016540 015304 043184 043184 043184 043184 043184 043184
eders S.T.; agen chain. chains in human alpha human alpha	mus musculu rattus norv legionella gallus gall homo sapien rattus norv homo sapien rattus norv cavia porce flaveria bi escherichia

modified and this statement is entities requires a license agr

```
RP
RX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRREE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Feng L., Xia Y., Wilson C.B.;
Alternative splicing of the NC1 domain of the human alpha 3(IV) collagen gene. Differential expression of mRNA transcripts that predict three protein variants with distinct carboxyl regions.
                                                                                                                                                                                                                                                                                                            <del>-</del>
                                                                                                                                                                                                                                                                                                                                                 +
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "Mutations in the type IV collagen alpha 3 (COL4A3) gene in autos recessive Alport syndrome.";
Hum. Mol. Genet. 3:1269-1273(1994).
-!- FUNCTION: TYPE IV COLLAGEN IS THE MAJOR STRUCTURAL COMPONENT GLOMERULAR BASEMENT MEMBRANES (GBM), FORMING A 'CHICKEN-WIRE', MESHWORK TOGETHER WITH LAMININS, PROTEOGLYCANS AND ENTACTIN/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Lemmink H.H., Mochizuki T., van den Heuvel L.P.W.J., Schroeder Barrientos A., Monnens L.A.H., van Oost B.A., Brunner H.G., Reeders S.T., Smeets H.J.M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VARIANT PRO-1474. 
MEDLINE=95078827; PubMed=7987301;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        spliced.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ALTERNATIVE SPLICING.
MEDLINE-93280184; Pubmed-8505332;
Bernal D., Quinones S., Saus J.;
"The human mRNA encoding the Goodpasture
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               alpha4(IV) collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE OF 1-29 FROM N.A. MEDLINE=98196854; PubMed=9537506;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TISSUE-Kidney
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE=94124597; PubMed=8294492,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "Two
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 inomiya Y.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Bio1
                                                                                                                                                                                                                                                                                  COCHLEA, LUNG AND BRAIN.

COCHLEA, LUNG AND BRAIN.

COCHLEA, LUNG AND BRAIN.

COMMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS OF THE DOMAIN (NCI) AT THEIR C-TERMINUS, FREQUENT INTERRUPTIONS OF THE G-X-Y REPEATS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH HEAVER FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL TRIPLE-HELICAL 7S DOMAIN.

TRIPLE-HELICAL 7S DOMAIN.

TRIPLE-HELICAL 7S DOMAIN POSITION OF THE TRIPEPTIDE REDEATING PTM: PROLINES AT THE THIRD POSITION OF THE TRIPEPTIDE REDEATING UNIT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS.

PTM: THE ALTERNATIVE SPLICED FORM V CONTAINS AN ADDITIONAL N-LINKED GLYCOSYLATION SITE.

N-LINKED GLYCOSYLATION SITE.

ARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULFIDE BONDING. 12
                                                                                                         DISEASE: ANTIBODIES AGAINST THE NC1 DOMAIN OF ALPHA3(IV) MITTHE HUMAN AUTOIMMUNE DISEASE, GOODPASTURE SYNDROME, WHICH: CHARACTERIZED BY HEMATURIA AND PULMONARY HEMORRHAGE.

DISEASE: DEFECTS IN COL4A3 ARE ASSOCIATED WITH THE TYPE I AUTOSOMAL RECESSIVE FORM OF ALPORT SYNDROME, AN HEREDITARY GLOMERULONEPHROPATHY CHARACTERIZED BY PROGRESSIVE FRUNL FAR HEMATURIA AND DEAFNESS. THE RECESSIVE FORM OCCURS EQUALLY I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SUBUNIT: THERE ARE SIX TYPE IV COLLAGEN ISOFORMS, ALPHA 1(IV) ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELIX STRUCTURE WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN NETWORK.
                                                                                                                                                                                                                                               THESE, LOCATI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TISSUE SPECIFICITY: ALPHA 3 AND COLOCALIZED AND PRESENT ONLY IN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                C-TERMINAL NC1 DOMAINS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SUBCELLULAR LOCATION: CELL SURFACE (POTENTIAL).
ALTERNATIVE PRODUCTS: AT LEAST 3 ISOFORMS; 1 (SHOWN HERE),
3/L5; ARE PRODUCED BY ALTERNATIVE SPLICING. THEY DIFFER IN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NIDOGEN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Lett. 424:11-16(1998).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               genes, COL4A3 and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Chem.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Chem. 268:12090-12094(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         OF 1439-1670,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sugimoto M., Oohashi T.,
                                                                                                                                                                                                                                                                    LOCATED IN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     269:2342-2348(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               chains
                                                                                                                                                                                                                                                                    THE NC1 DOMAIN, ARE CONSERVED IN ALL KNOWN TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COL4A4 coding for the human alpha3(IV) and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               are arranged head-to-head on
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ALTERNATIVE SPLICING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ALPHA 4 TYPE IV COLLAGENS ARE BASEMENT MEMBRANES OF KIDNEY,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Kigasawa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           antigen is alternatively
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      K., Yoshioka
                                                                                                         RENAL FAILURE,
EQUALLY BETWEEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               chromosome
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ħ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    autosoma]
                                                                                                                                                                                                                               MEDIATE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2/V A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           C.H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           J.O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EYE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AND
                                                                                                                                                                                                                                                                                                                                                                                                                                            MAY
```

between the Euro This s SWISS-PROT entry is copyright. It is produced through ween the Swiss Institute of Bioinformatics and the Exercise Bioinformatics Institute. There are no restricted the state of the stat institutions as long its content restrictions EMBL b collaboration no on

Qy

GLKGKRGDSGSPATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQD

Query Match Best Local Matches

Local Similarity

100.

.0%; 0;

Score 1340; Pred. No. 1.3); Mismatches

DB 1; .3e-118; 0;

Length

1670; 0;

Gaps 60

0;

Conservative

```
EMBL; X80031; CAA56335.1; --
EMBL; M92993; AAA21610.1; --
EMBL; S55790; AAB19637.1; --
EMBL; M81379; AAA51556.1; --
EMBL; L08650; AAA52044.1; --
EMBL; U08519; AAA18943.1; --
EMBL; U02520; AAA18943.1; --
CONFLICT
CONFLICT
SEQUENCE
                                                                                                                                                                                                                                                  CARBOHYD
MOD_RES
MOD_RES
                                                                                                                                                                           DISULFID
DISULFID
VARSPLIC
                                                                                                                                                                                                        DISULFID
DISULFID
DISULFID
DISULFID
                                                                                                                                                                                                                                                                                         SITE
                                                                                                                                                                                                                                                                                                             SITE
                                                                                                                                                                                                                                                                                                                                                       SITE
                                                                                                                                                                                                                                                                                                                                                                                                                           SIGNAL CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                              Extracellular matrix; Connective tissue; Repeat; Hydroxylation; Glycoprotein; Basement membrane; Collagen; Signal; Cell adhesio Alternative splicing; Polymorphism; Phosphorylation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Pfam;
                               CONFLICT
                                                                                                                                                                                                                                                                                 SITE
                                                                                                                                                                                                                                                                                                                                                                                                        DOMAIN
DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pfam; PF01413; C4; 2.
Pfam; PF01391; Collagen; 21.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                InterPro; IPR000087; -. InterPro; IPR001442; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MIM;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MIM;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MIM;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       or send an email to
                                                    VARIANT
                                                                       VARIANT
                                                                                                                                    VARSPLIC
                                                                                                                                                                                                                                                                                                                                                                          DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                               DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       233450;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  203780;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AB008495; BAA25064.1;
 1539
1594
1663
1670
                                                                      1474
                                                                                                                                    1488
                                                                                                                                                                                                                                                                                                                                                       1426
                                                                                                                                                                                                                                                                                                                                                                         1427
                                                    1495
                                                                                                                                                                            1604
1616
1586
                                                                                                                                                                                                         1505
1570
                                                                                                                                                                                                                                                                                           1345
                                                                                                                                                                                                                                                                                                                                                                                               1439
  AA;
                                                                     1474
                                                                                                                                                                                                                                                                                                                                                                                                                          28
1670
           1664
                     1539
1594
                                                    1495
                                                                                                                                   1670
                                                                                                                                                                            1434
253
1435
1437
1551
1551
1511
1665
1662
1670
                                                                                                                                                                                                                                                                                         793
998
1156
1308
1347
                                                                                                                                                                                                                                                                                                                                                      1427
                                                                                                                                                                                                                                                                                                                                                                          1444
                                                                                                                                                                                                                                                                                                                                                                                              42
1438
1670
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           license agreement (See http://www.isb-sib.ch/announce/license@isb-sib.ch).
  54 QV
161740 MW;
                                                                                                                                                                                                                                                         CELL ATTACHMENT SITE (
CHARLED (GLCNAC . . . )
PHOSPHORYLATION (BY SI
/FTId=VAR_001909.

R -> I (IN REF. 7).

T.-> A (IN REF. 4).

QV -> HL (IN AAA52044 AND REF.

WW; 9B95708AF339BEAE CRC64;
                                                                                                                                  NSYSFWLASLNPERMERKPIPSTVKAGELEKIISRCQVCMK
KRH -> KAYSINCESWGIRKNKKSLSGVHEEKTLKLKKTA
ELVFFILKNKVMTEHAPU (IN ISDFORM 2).
GTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPAL
                                                                                                                                                                          OR 1548 (BY SIMILARITY).
OR 1551 (BY SIMILARITY).
BY SIMILARITY
OR 1662 (BY SIMILARITY).
OR 1665 (BY SIMILARITY).
BY SIMILARITY.
BY SIMILARITY.
                                                                                                                                                                                                                                                  N-LINKED (GLCNAC...) (POTENTIAL). PHOSPHORYLATION (BY SIMILARITY). PHOSPHORYLATION (BY SIMILARITY).
                                                                                                              MPMNMAPITGRALEPYISRCTVCEGPAIAIAVHSQTTDIPP
CPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLEEFRA
                                                                                                                                                                                                                                                                                                                                                                         ANTIGEN) (BY SIMILARITY EPITOPE (RECOGNIZED BY
                                                                                                      SPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVK
                                                                                                                                                                                                                                                                                                                                                                ANTIBODIES).
                                                                                                                                                                                                                                                                                                                                                                                                      7S DOMAIN.
TRIPLE-HELICAL
                                                                                                                                                                                                                                                                                                                                                                                                                                      POTENTIAL
                                                            /FTId=VAR_001908
                                                                                           AGELEKIISRCQVCMKKRH
                                                                                                                                                                                                                                                                                                                                            (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                               NONHELICAL REGION (NC1)
                                                                                                                                                                                                                                                                                                                                                                                                                            COLLAGEN ALPHA
                                                                                                                                                                                                                                                                                                                                                      (BY COLLAGENASE)
                                                                                                                                                                                                                                                                                                                                                                          BY GOODPASTURE
                                                                                                                                                                                                                                                                               E (POTENTIAL).

E (POTENTIAL).

E (POTENTIAL).

E (POTENTIAL).

E (POTENTIAL).

E (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                            CHAIN
                                                                                           DALFVKVLRSP
                                                                                                                                                                                                                                                                                                                                                                                               (GOODPASTURE
                                                                                                                                                                                                                                                                                                                                                                                                                                                           adhesion;
           <u>6</u>
```

Ç.

```
Bb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δÃ
  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  028084;
01-NOV-1997 (Re.
01-NOV-1997 (Re.
01-NOV-1997 (Re.
COLLAGEN ALPHA:
COLLAGEN ALPHA:
COLLAGEN (BOV)
                                                                                                                                                                                          "Identification of the Goodpasture antigen of collagen IV.";
J. Biol. Chem. 263:13374-132001
                                                                                                                                                                                                                                                                                alpha 4,
J. Biol.
                                                                   J. Biol. Chem. 262:7874-7877(1987).
-i- FUNCTION: TYPE IV COLLAGEN IS THE MAJOR STRUCTURAL COMPONENT GLOMERULAR BASEMENT MEMBRANES (GBM), FORMING A 'CHICKEN-WIRE' MESHWORK TOGETHER WITH LAMININS, PROTEOGLYCANS AND ENTACTIN/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Bos taurus (Bovine).
Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CA34_
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1427
                                                                                                                                                                                                                                                                                                                                                                         Morrison K.E., Germino G.G., Reeders S.T. "Use of the polymerase chain reaction to encoding the bovine alpha 3 chain of type J. Biol. Chem. 266:34-39(1991).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Bovidae; Bovinae; Bos
NCBI_TaxID=9913;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1667
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1487
                                                                                                                membrane collagen."
                                                                                                                                                  MEDLINE-87222419; PubMed=2438283;
Butkowski R.J., Langeveld J.P.M.,
                                                                                                                                                                                                                                                                             Gunwar S., Saus J., Noelken M.E., Hudson B.G.;
"Glomerular basement membrane. Identification of alpha 4, of type IV collagen.";
J. Biol. Chem. 265:5466-5469(1990).
                                                                                                                             "Localization of the
                                                                                                                                           Hudson
                                                                                                                                                                           SEQUENCE OF 227-244.
                                                                                                                                                                                                                                             MEDLINE-88330844; PubMed=3417661;
                                                                                                                                                                                                                                                          SEQUENCE OF 227-254.
                                                                                                                                                                                                                                                                                                                            MEDLINE=90202779; PubMed=2318822;
                                                                                                                                                                                                                                                                                                                                        rissuE=Kidney;
                                                                                                                                                                                                                                                                                                                                                      SEQUENCE OF
                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE=91093146; PubMed=1985905;
                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                    Ξ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          61
NIDOGEN.

SUBURIT: THERE ARE SIX TYPE IV COLLAGEN ISOFORMS, ALPHA 1

ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELIX STRUCT

WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN NETWORK.

SUBCELLULAR LOCATION: CELL SURFACE (POTENTIAL).

DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    _BOVIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            KKRH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KKRH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LGTLGSCLQRETTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYIS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GLKGKRGDSGSPATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQD
                                                                                                                                           B.G.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1670
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (Rel. 35, Created)
(Rel. 35, Last sequence upole (Rel. 35, Last annotation PHA 3(IV) CHAIN (FRAGMENT)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Chordata; Craniata; Vertebrat
Cetartiodactyla; Ruminantia;
                                                                                                                             Goodpasture
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sequence update)
annotation update)
                                                                                                                                                                                                                                                                                                                                                                                              Reeders S.T.;
reaction to clone
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRT;
                                                                                                                             epitope
                                                                                                                                                    Wieslander
                                                                                                                                                                                                                                                                                                                                                                                     type
                                                                   BM), FORMING A 'CHICKEN-WIRE'
PROTEOGLYCANS AND ENTACTIN/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Vertebrata; Euteleostomi;
                                                                                                                             ť
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A
                                                                                                                                                                                                                                   Quinones
                                                                                                                                                                                                                                                                                                                                                                                      ٧I
                                                                                                                                                                                                                       as
                                                                                                                             a
                                                                                                                                                 J.
                                                                                                                                                                                                                                                                                                                                                                                      collagen
                                                                                                                                                                                                                        the
                                                                                                                             novel
                                                                                                                                                                                                                                                                                                       of
                                                                                                                                                                                                                                                                                                                                                                                                and
                                                                                                                                                                                                                                                                                                     a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pecora; Bovoidea;
                                   HELIX STRUCTURE
                                                                                                                                                    Hamilton
                                                                                                                                                                                                                      s S., F
alpha
A NONCOLLAGENOUS
                                                                                                                                                                                                                                                                                                                                                                                                 sequence
                                                                                                                                                                                                                                                                                                       fourth
                                                                                                                             chain
                                                                                                                                                                                                                      Hudson
a 3(IV)
                                                                                                                             of
                                                                                                                                                                                                                                                                                                     chain,
                                                                                                                                                                                                                                                                                                                                                                                                 Q
                                                                                                                             basement
                                                                                                                                                                                                                      B.G.;
chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1606
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           180
```

```
RESULT 3
CA14_HUMAN
ID CA14_HUMAN
AC P02462;
DT 21-JUL-1986
                                                                                                                                                                                   δÃ
                                                                                                                                                                                                                                         Ω
                                                                                                                                                                                                                                                                                                 δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                         дb
                                                                                                                         ρy
                                                                                                                                                          Вb
                                                                                                                                                                                                               B
                                                                                                                                                                                                                                                                     B
                                                                                                                                                                                                                                                                                                                             Ъ
                                                                                                                                                                                                                                                                                                                                                     Qy
                                                                                                                                                                                                                                                                                                                                                                                                Query
Best L
                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                       MOD_RES
MOD_RES
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
CONFLICT
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 between the Swiss Institute of Bioinformatics and the EMBL outstation - the Buropean Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Glycoprotein;
NON_TER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pfam;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Pfam; PF01413; C4; 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              InterPro; IPR000087;
InterPro; IPR001442;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Extracellular
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBL; M63139; AAA62708.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           -
                                                                                                                            240
                                                                                                   467
                                                                                                                                                          407
                                                                                                                                                                                                               347
                                                                                                                                                                                                                                                                                                                             227
                                                                                                                                                                                                                                                                                                                                                                                   y Match
Local Sinches 221;
                                                                                                                                                                                   180
                                                                                                                                                                                                                                           120
                                                                                                                                                                                                                                                                      287
                                                                                                                                                                                                                                                                                                 60
                                                                                                                                                                                                                                                                                                                                        1 GLKGKRGDSGSPATWTT-RGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DOMAIN (NC1) AT THEIR C-TERMINUS, FREQUENT INTERRUPTIONS OF THE G-X-Y REPEATS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH MAY CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL TRIPLE-HELICAL 7S DOMAIN.

PTM: PROLINES AT THE THIRD POSITION OF THE TRIPEPTIDE REPEATING UNIT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS.

PTM: TYPE IV COLLAGENS CONTAIN NUMEROUS CYSTEINE RESIDUES WHICH ARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULFIDE BONDING. 12 OF THESE, LOCATED IN THE NC1 DOMAIN, ARE CONSERVED IN ALL KNOWN TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SIMILARITY: TO OTHER TYPE IV COLLAGENS
                                                                                                   MKMR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SWISS-PROT entry is copyright. It is produced through a collab-
en the Swiss Institute of Bioinformatics and the EMBL outst
Buropean Bioinformatics Institute. There are no restrictions
by non-profit institutions as long as its content is in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  IV COLLAGENS
                                                                                                                             MKKR
                                                                                                                                                       SRCTVCEGPAIAIAVHSQTTDIPPCPAGWISLWKGFSFIMFTSAGSEGAGQALASPGSCL
                                                                                                                                                                                                                            SRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCL 179
                                                                                                                                                                                                                                                                      DLGTLGSCLQRFTTMPFLFCNINDVCNFASRNDYSYWLSTPAMIPMDMAPITGRALEPYI
                                                                                                                                                                                                                                                                                    DLGTLGSCLQRETTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNWAPITGRALEPYI 119
                                                                                                                                                                                                                                                                                                                             GLKGKPGDTGPPAAGAVMRGFVFTRHSQTTAIPSCPEGTEPLYSGFSLLFVQGNEQAHGQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PF01391; Collagen; 4.
PF01391; Connective
                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                            243
                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Basement
                                                                                                                                                                                                                                                                                                                                                                                                                                                         A,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1
238
471
108
232
232
238
238
352
349
346
466
463
                                                                                                                                                                                                                                                                                                                                                                                                                                                         47585
                                                                                                                                                                                                                                                                                                                                                                                                 90
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          membrane;
                                                                                                                                                                                                                                                                                                                                                                                                 . 68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                         MW;
                                                                                                                                                                                                                                                                                                                                                                                    10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  HYDROXYLATION.
OR 349 (BY SIMII
OR 352 (BY SIMII
OR 352 (BY SIMII
BY SIMILARITY.
OR 463 (BY SIMI
OR 466 (BY SIMI
OR 466 (BY SIMI
BY SIMILARITY.
S -> Y (IN REF.
                                                                                                                                                                                                                                                                                                                                                                                   Score 1210.5; DB 1;
Pred. No. 5.4e-107;
0; Mismatches 12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TRIPLE-HELICAL REGION.
NONHELICAL REGION (NC1)
CELL ATTACHMENT SITE (P
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     HYDROXYLATION
                                                                                                                                                                                                                                                                                                                                                                                                                                                       -> Y (IN REF. 3).
C03B66F14E7008DE CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                463 (BY SIMILARITY).
466 (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         349 (BY SIMILARITY).
352 (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Collagen;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          tissue; Repeat; Hydroxylation. Collagen; Cell adhesion.
                              1669
                              A
                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                              Length
                                                                                                                                                                                                                                                                                                                                                                                                              471;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         a collaboration -
                                                                                                                                                                                                                                                                                                                                                                                 1;
                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                          466
                                                                                                                                                                                                                                                                      346
                                                                                                                                                                                                                                                                                                                             286
                                                                                                                                                                                                                                                                                                                                                        59
                                                                                                                                                                                                                406
                                                                                                                                                                                                                                                                                                                                                                                   1;
```

(Rel. 01, Created)

```
#61
SEQUENCE OF 1256-1669 FROM N.A.
MEDLINE-85207819; PubMed-2581969;
Pihlajaniemi T., Tryggvason K., Myers J.C.,
Prockop D.J., Boyd C.D.;
  overlapping
             collagen
                        ,"The
                                          MEDLINE=89034231; PubMed=3182844;
                                                                                                                      Brinker
                                                                                                                                                             procollagen reveal an unusual homology halves of the carboxyl-terminal domain. 2. Biol. Chem. 260:7681-7687(1985).
                                                                                                                                                                                                                                                                       amino-acid sequence of a
alpha 1(IV) chain.";
                                                                                                                                                                                                                                                                                                       Babel W.,
                                                                                                                                                                                                                                                                                                                                                         region (7S domain) of the alpha 1 (IV) membrane collagen.";
                                                                                                                                                                                                                                                                                                                                                                                        Glanville
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TISSUE=Placenta;
MEDLINE=88029471; PubMed=3311751;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "Complete primary structure of the membrane (type IV) collagen."; FEBS Lett. 225:188-194(1987).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       [1]
SEQUENCE FROM N.A.
MEDLINE-89340433; PubMed-2701944;
Medinen R., Huotari M., Ganguly A.,
                                 Soininen
                                                      SEQUENCE OF
                                                                             Proc.
                                                                                                                                MEDLINE-85216555;
                                                                                                                                            SEQUENCE
                                                                                                                                                                                                                                                                                                                            SEQUENCE OF 534-1447
                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE-86004708;
                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE OF 28-243.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Brazel D., Oberbaeumer I.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE OF 1-943 FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Soininen R., Haka-Risku
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE OF 46-1257
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                 MEDLINE=85003629;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE=88083584;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      COLLAGEN ALPHA
                                                                                        "Restricted homology between procollagen chains.";
                                                                                                                                                                                                                                                                                                                                                                                                                                        "Completion of the amino acid sequence of the alpha 1 basement membrane collagen (type IV) reveals 21 non-trinterruptions located within the collagenous domain.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Deutzmann R.,
                                                                                                                                                                                                                                                                                                                                                                             Blanville R.W., Qian R.Q., Siebold B., Amino acid sequence of the N-terminal
                                                                                                                                                                                                                                                             ur. J. Biochem. 143:545-556(1984)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1-FEB-1996
1-OCT-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Biol.
  inen R., Huotari M., Hostikka structural genes for alpha lagen are divergently encoded charming promoter region.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IV collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   sapiens (Human)
                                                                             Natl.
                                                                                                                                                                                             clones coding
                                                                                                       E OF 1259-1659 FROM N.A.
-85216555; PubMed-2582422;
J.M., Gudas L.J., Loidl H.R.,
es N.A., Myers J.C.;
                                                                                                                                                                                                                                                                                                                                                Biochem. 152:213-219(1985)
                                                                                                                                                                                                                                                                                                                                                                                                                                Biochem. 168:529-536(1987).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Chem.
                                                                                                                                                                                                                                                                                                      Glanville
                                                                                                                                                                                                                                                                               of human-basement-membrane (type IV) collagen. sequence of a 914-residue-long pepsin fragment
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      6 (Rel. 33, Last : 0 (Rel. 40, Last : LPHA 1(IV) CHAIN |
                                                      1-28 FROM N.A
                                                                             Acad.
                                                                                       chains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Kuehn K.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            264:13565-13571(1989).
                                                                             Sci.
                                                                                                                                                                                                                                                                                                                                                                                                 PubMed-4043082
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PubMed=3691802;
                                                                                                                                                                                                                                                                                                                PubMed=6434307
                                                                                                                                                                                             for the pro-alphal(IV) chain of human type
                                                                                                                                                                                                                                                                                                      R.W.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Chordata;
Primates;
                                                                           U.S.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     sequence update) annotation update) PRECURSOR.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Dieringer H., Babel W.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Prockop
                                                                                              human alpha
                                                                          82:3649-3653(1985)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Craniata; Vo
Catarrhini;
       a S.L., Prockop D.J., Tryggvason K.;
1 and alpha 2 chains of human type I
on opposite DNA strands and have an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           p D.J., Tryggvason K.;
alpha 1-chain of human
                                                                                                                    Wang
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Prockop
                                                                                                                                                                         of amino acid
                                                                                                                                                                                                                                                                                                                                                                 Risteli J., Kuehn K.; aggregation and cross-1 chain of human basement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Vertebrata; Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Hominidae;
                                                                                              type
                                                                                                                     S.-Y.,
                                                                                                                                                                                                                    Kurkinen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             D.J.,
alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                    non-triplet
                                                                                                                     Rosenbloom
                                                                                                                                                                                                                                                                                                                                                                            Kuehn K.;
and cross-linking
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Glanville
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Tryggvason
1 chain of
                                                                                                                                                                                                                 X
                                                                                                                                                                                   sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                             chain
                                                                                                other
                                                                                                                                                                                                                   Lebo
                                                                                                                                                                                                                                                                                 from the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             basement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                of
                                                                                                                                                                                                                                                                                                                                                                                                                                                              of human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   R.W.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               K.;
human
                                                                                                                                                                                   in
                                                                                                                                                                                   two
EMBL;
                                                                                            EMBL;
                                                                                                                   EMBL;
EMBL;
                                                                                                                                                            EMBL;
                                                                                                                                                                                  EMBL;
EMBL;
                                                                                                                                                                                                                                      EMBL;
                     EMBL;
                                EMBL;
                                                               EMBL;
                                                                        EMBL;
                                                                                   EMBL;
                                                                                                                                                 EMBL;
                                                                                                                                                                                                                 EMBL;
                                                                                                                                                                                                                                                                     EMBL;
                                                                                                                                                                                                                                                                                         EMBL;
                                                                                                                                                                                                                                                                                                                         EMBL;
                                                                                                                                                                                                                                                                                                                                   EMBL;
                                                                                                                                                                                                                                                                                                                                             EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -
                                                                                                                                                                                                                                                            EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1
                                                                                                                                                                                                                             EMBL;
                                                                                                                                                                                                                                                                                EMBL;
                                                                                                                                                                                                                                                                                                               EMBL;
                                                                                                                                                                                                                                                                                                                                                       EMBL;
                                                                                                                                                                                                                          M26537;
M26538;
M26548;
                                                                                                                                                                                                                                                                                        M26542;
M26543;
M26544;
                                                                                                                                       M26555;
M26556;
M26557;
                                                                                                                                                                                                                                                                                                                       M26550;
M26540;
                    M26560)
M26561;
M26562;
M26536;
M26563;
M265641;
M265641;
M26564;
```

M26547;

M26545;

AAA53098

JOINED
JOINED
JOINED
JOINED
JOINED
JOINED
JOINED
JOINED

AAA53098.

M26554; M26553; M26552; M2655 M26549;

AAA53098

AAA53098. AAA53098.

AAA53098

JOINED
JO

```
ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELIX STRUCTURE WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN ISOFORMS, ALPHA 1(IV)-ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELIX STRUCTURE WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN NETWORK.

-i- DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS DOMAIN (NC1) AT THEIR C-TERMINUS, FREQUENT INTERRUPTIONS OF THE G-X-Y REPEATS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH MAY CAUGE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL TRIPLE-HELICAL 7S DOMAIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Siebold B., Deutzmann R., Kuehn K.;
"The arrangement of intra- and intermolecular disulfide bonds in carboxyterninal, non-collagenous aggregation and cross-linking do of basement-membrane type IV collagen.";
Eur. J. Biochem. 176:617-624(1988).
-1- FUNCTION: TYPE IV COLLAGEN IS THE MAJOR STRUCTURAL COMPONENT GLOMERULAR BASEMENT MEMBRANES (GBM), FORMING A 'CHICKEN-WIES' MESHWORK TOGETHER WITH LAMININS, PROTEOGLYCANS AND ENTACTIN/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         J. Biol.
[9]
                                                                                                                                                      use by non-profit institutions as long modified and this statement is not removed.
                                                                                             or send an email to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TISSUE=Placenta;
MEDLINE=89005112; PubMed=2844531;
                                                                                                                                                                                                                   the European Bioinformatics Institute.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE OF 1441-1669,
                                                                                                                                                                                                                                                                                                                                                                         PTM: LYSINES AT THE THIRD POSITION OF THE TRIPEPTIDE REPEATING UNIT ARE HYDROXYLATED IN ALL CASSES AND BIND CARBOHYDRATE.

PTM: PROLLINES AT THE THIRD POSITION OF THE TRIPEPTIDE REPEATING UNIT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS.

PTM: TYPE IV COLLAGENS CONTAIN NUMEROUS CYSTEINE RESIDUES WHICH PTM: TYPE IV COLLAGENS CONTAIN NUMEROUS CYSTEINE RESIDUES WILLIAGARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULFIDE BONDING. 12 OF THESE, LOCATED IN THE NC1 DOMAIN, ARE CONSERVED IN ALL KNOWN TYPE
                                                                                                                                                                                                                                                                                                                                                     IV COLLAGENS.
                                                                                                                                                                                                                                                                                  SWISS-PROT entry
M26576;
J04217;
                                                                                                                                                                                 SS-PROT entry is copyright. It is produced through the Swiss institute of Bioinformatics and the E pean Bioinformatics Institute. There are no rest non-profit institutions as long as its content
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Chem.
                                                                                             equires a license agreement (S email to license@isb-sib.ch).
                                 AAA53098.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    263:17217-17220(1988)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AND DISULFIDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BONDS
                                                                                                                        (See http://www.isb-sib.ch/announce/
                                                                                                                                                      Usage
                                                                                                                                                                                                                                                                                  through
                                                                                                                                                          bу
                                                                                                                                                                                                               restrictions
                                                                                                                                                             and
                                                                                                                                                                                                                                                       EMBL
                                                                                                                                                                                                                                                                                      ۵
                                                                                                                                                             ior
                                                                                                                                                                                                                                                       collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                domain
                                                                                                                                                          n no way
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   QF.
                                                                                                                                                                                                                      9
```

a.

```
밁
                                                                                                                                                                                             δÃ
                                                                                                                                                                                                                                 망
                                   맑
                                                             Š
                                                                                                                               Qγ
                                                                                                                                                                В
                                                                                                                                                                                                                                                               ş
                                                                                                                                                                                                                                                                                                 멍
                                                                                                                                                                                                                                                                                                                              Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                 $\text{Square}$ \text{Square}$ \text
                                                                                                                                                                                                                                                                                                                                                                  Matches
                                                                                                                                                                                                                                                                                                                                                                                   ery Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CONFLICT
CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DISULFID DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DISULFID DISULFID
                                   1667
                                                                                                                                                                                                                                  1487
                                                                                                                                                                                                                                                                                                 1429
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EMBL;
PIR;
MIM;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EMBL;
EMBL;
EMBL;
EMBL;
EMBL;
EMBL;
EMBL;
                                                                                                  1607
                                                                                                                                                                   1547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Repeat; Hydroxylation; Glycoprotein; SIGNAL 1 27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pfam; PF01413; C4; 2.
Pfam; PF01391; Collagen;
                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PROPEP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Extracellular matrix; Connective tissue;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  InterPro; IPR001442;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               InterPro; IPR000087;
                                                                                                                                   181
                                                                                                                                                                                                  121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ISULFID
ISULFID
                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                  Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S16876;
120130;
                                                                  Š
                                                                                                                                                              RCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLE
                                                                                                                                                                                                                                                                                                GLKGKRGDSGSPATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQD
                                   RR 1668
                                                                                                 EFRSAPFIECHGRGTCNYYANAYSFWLATIERSEMFKKPTPSTLKAGELRTHVSRCQVCM
                                                                                                                              EFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVCM
                                                                                                                                                                                                                                 LGTAGSCLRKFSTMPFLFCNINNVCNFASRNDYSYWLSTPEPMPMSMAPITGENIRPFIS
                                                                                                                                                                                                                                                LGTLGSCLQRETTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYIS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               X05561;
M10940;
M11315;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 M26575;
Y00706;
                                                                                                                                                                                                                                                                                                                                                                 al Similarity 69.0
167; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                M26570;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              6876; CGHU4B
                                                                  242
                                                                                                                                                                                                                                                                                                                                                                                                                                                 1460
1500
1570
1504
1616
237
241
319
719
837
842
896
994
991
991
1010
1012
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              28
173
173
1441
126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAA53098.1
CAA68698.1
CAA68698.1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAA52006
                                                                                                                                                                                                                                                                                                                                                                                                                                                 ΑA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  71.6%;
69.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                 160611
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 21.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             JOINED.
JOINED.
JOINED.
JOINED.
JOINED.
JOINED.
JOINED.
JOINED.
JOINED.
                                                                                                                                                                                                                                                                                                                                                                 32;
                                                                                                                                                                                                                                                                                                                                                                                                                                               NONHELICAL
N-LINKED (G
                                                                                                                                                                                                                                                                                                                                                               Score 960; DB 1
Pred. No. 1e-82;
2; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              \frac{9}{8}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ^{\circ}_{R}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AMINO-TERMINAL PROPEPTIDE COLLAGEN ALPHA 1(IV) CHAIN TRIPLE-HELICAL REGION.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1662.
1665.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1548
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Z Z O Z T
                                                                                                                                                                                                                                                                                                                                                                                                                                                 3BEBA6DFFB9B8A84
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ÞΧ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               줆
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Collagen;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IN REF. 4)
IN REF. 3)
IN REF. 5)
IN REF. 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (GLCNAC. .
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REF.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              REF.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          REGION (NC1).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                REF.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REF.
                                                                                                                                                                                                                                                                                                                                                                                               DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Basement
                                                                                                                                                                                                                                                                                                                                                               41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Signal
                                                                                                                                                                                                                                                                                                                                                                                               Length 1669
                                                                                                                                                                                                                                                                                                                                                                                                                                                 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               membrane
                                                                                                                                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (7S DOMAIN)
                                                                                                                                                                                                                                                                                                                                                               2;
                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                  1666
                                                                                                                                                                                                                                                                                                 1486
                                                                                                                                                                1606
                                                                                                                                                                                                180
                                                                                                                                                                                                                                 1546
                                                                                                                                                                                                                                                               120
                                                                                                                                                                                                                                                                                                                                60
                                                                                                                                                                                                                                                                                                                                                               ۳.
REPUBLICAN 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           4_MOUSE
CA14_MOUSE
P02463;
21-JUL-1986
                                                                                                                                                                                                                                                                                                                                                                 Rurkinen M., Condon M.R., Blumberg Saus J., Pihlajaniemi T.;
"Extensive homology '
             MEDLINE-89071759; PubMed=3200851;
Burbelo P.D., Martin G.R., Yamada Y.;
"Alpha 1(IV) and alpha 2(IV) collagen genes are regulated bidirectional promoter and a shared enhancer.";
Proc. Natl. Acad. Sci. U.S.A. 85:9679-9682(1988).
                                                                                                                       SEQUENCE OF 1-28 FROM N.A.
SEQUENCE OF 1-28 FROM N.A.
MEDLINE-89066738; PubMed=3198626;
Kaytes P., Wood L., Theriault N., Kurkinen M.,
"Head-to-head arrangement of murine type IV co.
J. Biol. Chem. 263:19274-19277(1988).
                                                                                                              [8]
                                                                                                                                                                                                                                                                        MEULINE=86196099; PubMed=3009468; Sakurai Y., Sullivan M., Yamada Y
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     cne alpha l(IV) chain of basement membrane complementary DNA.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A. MEDLINE=89197932; Muthukumaran G., E
                                                                            SEQUENCE OF 1-28 | MEDLINE=89071759;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE OF 1276-1669 FROM N.A. MEDLINE=85127033; PubMed=2578961;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE OF 1149-1424 FROM N.A. MEDLINE=86301886; PubMed=3755692;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE OF 1-1154 FROM N.A. MEDLINE=88112221; PubMed=3338568;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              J. Biol. Chem.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Eukaryota; Metazoa; Mammalia; Eutheria;
                                                                                                                                                                                                                                             collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            synthetic oligodeoxynucleotide. ";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "The
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mus musculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               01-FEB-1991
15-JUL-1999
                                                                                                                                                                                                                                                               "Alpha 1 type
                                                                                                                                                                                                                                                                                                                                              "Extensive homology between the carboxyl-terminal peptides of mouse alpha 1(IV) and alpha 2(IV) collagen.";
J. Biol. Chem. 262:8496-8499(1987).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Oberbaeumer I., Laurent M., Schwarz U., Sakurai Y., Yamada Y., Vogeli G., Voss T., Siebold B., Glanville R.W., Kuhn K.; "Amino acid sequence of the non-collagenous globular domain (NC1) the alpha 1(IV) chain of basement membrane collagen as derived from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "Isolation of an alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "cDNA clones completing
                                                                                                                                                                                                                                 Biol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               J. Biochem.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            complete primary structure for agen IV. Differential evolution iol. Chem. 264:6310-6317(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             43:301-304(1986).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Lett.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             mouse.
                                                                                                                                                                                                                                                                                                                 SEQUENCE
                                                                                                                                                                                                                               genes.
Chem.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Theriault
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              227:5-8(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                s (Mouse).
Metazoa; Chordata; C
Metazoa; Rodentia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Rel. 17, (Rel. 38, 38) (Rel. 38)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            the alpha
                                                                                                                                                                                                                                                            IV collagen
                                                                                                                                                                                                                               261:6654-6657(1986).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STANDARD;
                                                                                                 FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Blumberg
                                                                                                                                                                                                                                                                                                                 FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              147:217-224(1985).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              01,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PubMed=2703490;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N., Vogeli G.;
eting the nucleotide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Horn E., Sobel M.E.,
na 1 type-IV collagen
                                                                                                  N.A
                                                                                                                                                                                                                                                                                                                 z
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ب
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               В.,
                                                                                                                                                                                                                                                            gene evolved
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             sequence up
annotation
PRECURSOR.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              of basement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Kurkinen M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Craniata; Vertebrata; Sciurognathi; Muridae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRT;
                                                                                                                                                                                                                                                                                  ĸ
                                                                                                                                                                                                                                                                                                                                                                                                               В.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               of c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             and
                                                                                                                                                                                                                                                               differently from fibrillar
                                                                                                                                                                                                                                                                                                                                                                                                               Barlow
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             alpha 1-chain of mo
collagen IV domains.
                                                                                                                                             IV collagen genes.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            d derived
membrane
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Zon G., Vogeli G. cDNA clone using
                                                                                                                                                                                                                                                                                                                                                                                                               D.,
                                                                                                                                                                Vogeli G.;
```

amino (type

acid IV) collagen

Euteleostomi; Murinae;

E mouse ins.";

Quinones

from

уd

1:

```
CCCCCCCCCCCCRRRRRRR
  CONFLICT
CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                   EMBL; M13026;
EMBL; M13027;
EMBL; M13043;
                                              CONFLICT
                                                                          CARBOHYD
CONFLICT
                                                                                                      DISULFID DISULFID
                                                                                                                                 DISULFID
                                                                                                                                                              DISULFID DISULFID
                                                                                                                                                                                                      CHAIN
DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                               EMBL;
EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Killen P.D., Burbelo P., Sakurai Y., Yamada Y.; "Structure of the maino-terminal portion of the murine alpha 1(IV collagen chain and the corresponding region of the gene."; J. Biol. Chem. 263:8706-8709(1988).

-!- FUNCTION: TYPE IV COLLAGEN IS THE MAJOR STRUCTURAL COMPONENT GLOMERULAR BASEMENT MEMBRANES (GBM), FORMING A 'CHICKEN-WIRE'
                                                                                                                                                                                          DOMAIN
                                                                                                                                                                                                                                 PROPEP
                                                                                                                                                                                                                                               Repeat; Hydroxylation; Glycoprotein; Collagen; Signal. SIGNAL 1 27
                                                                                                                                                                                                                                                                       Extracellular matrix; Connective tissue; Basement membrane;
                                                                                                                                                                                                                                                                                   Pfam; PF01413; C4; 2.
Pfam; PF01391; Collagen; 21.
                                                                                                                                                                                                                                                                                                               MGD; MGI:88454; Col4al.
InterPro; IPR000087; -.
InterPro; IPR001442; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    use by non-profit institutions as long modified and this statement is not removed. entities requires a license agreement (See or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           between
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE OF 1-129 FROM N.A. MEDLINE=88243724; PubMed=3379041;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SUBUNIT: THERE ARE SIX TYPE IV COLLAGEN ISOFORMS, ALPHA 1(IV)-
ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELLX STRUCTURE
WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN NETWORK.

DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS
DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS
DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS
COMBET IN THE FIRE C-TERMINUS, FREQUENT INTERRUPTIONS OF THE
G-X-Y REPEATS IN THE CTRIPLE HELIX), AND A SHORT N-TERMINAL
CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL
TRIPLE-HELICAL 7S DOMAIN.

PTM: PROLINES AT THE THIRD POSITION OF THE TRIPEPTIDE REPEATING.
UNIT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS.
PTM: TYPE IV COLLAGENS CONTAIN NUMBERODS CYSTEINE RESIDUES WHICH
ARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULFEDE BONDING. 12 OF
THESE, LOCATED IN THE NC1 DOMAIN, ARE CONSERVED IN ALL KNOWN TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        s SWISS-PROT entry is copyright. It is produced through ween the Swiss Institute of Bioinformatics and the Event European Bioinformatics Institute. There are no restr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NIDOGEN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GLOMERULAR BASEMENT MEMBRANES (GBM), FORMING A 'CHICKEN-WIRE MESHWORK TOGETHER WITH LAMININS, PROTEOGLYCANS AND ENTACTIN/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IV COLLAGENS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; M15832;
; M14042;
                                                                                                                                                                                                                                                                                                                                                                                                                               M13024;
M13025;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            J03758;
м23333;
                                                                                                                                                                                                                                                                                                                                                                                                                                                            M12879;
                                                                                                                                                                                                                                                                                                                                                                        J04448;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               J04694;
                                                                                                      173
173
1441
1460
1493
1505
1570
1604
                                                                                                                                                                                                                                                                                                                                                          CGMS4B
                                                                                                                                                                                                                                                                                                                                                                        AAA37344.1; -.
AAA37345.1; -.
AAA37346.1; -.
AAA37346.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                        CAA29946.1; -.; CAA26132.1; -.; AAA37340.1; -.; AAA37342.1; -.; AAA37343.1; -.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; AAA37439.1; -.
; AAA51625.1; -.
; AAA50292.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                             NOT_ANNOTATED_CDS
                                                                                                                                                                                                                                                                                                                                                                                                                                            NOT_ANNOTATED_CDS
     172
1669
1669
1551
1548
1511
1665
1665
1662
1622
1622
1623
1866
186
319
369
OR 1551 (BY SIMILARITY).

BY SIMILARITY.

OR 1662 (BY SIMILARITY).

OR 1665 (BY SIMILARITY).

BY SIMILARITY.

N-LINKED (GLCNAC. . .) (PO
A -> P (IN REF. 2).

S -> L (IN REF. 2).

Q -> L (IN REF. 2).

L -> F (IN REF. 2).

P -> L (IN REF. 2).
                                                                                                                                                                                                    AMINO-TERMINAL I
COLLAGEN ALPHA :
TRIPLE-HELICAL I
                                                                                                                                                          NONHELICAL REGION (NC1).
OR 1548 (BY SIMILARITY).
OR 1551 (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ere are no rest
as its content
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Y.;
the murine alpha l(IV)
                                                                                                                                                                                                      REGION
                                                                                                                                                                                                                                PROPERTIDE (7S DOMAIN)
                                                                                                                                                                                                                   1(IV) CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Уď
                                                                                        (POTENTIAL)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EMBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              s,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               commercial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .
HO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           gn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            way
```

```
RESULT
CA54_HU
δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Вþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QУ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Вр
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ρ
                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SQ FT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                            _HUMAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CONFLICT
CONFLICT
CONFLICT
CONFLICT
CONFLICT
SEQUENCE
                 MEDIINE-90337990; PubMed-zur.
Pihlajaniemi T., Pohjolainen E.R., Myers urr.
"Complete primary structure of the triple-helical rur.
"Complete primary domain of a new type IV collagen
                                                                                                                                                                                                                                                                                                                                                      CA54_HUMAN STANDARD;
F29400; Q16126; Q16006;
01-DEC-1992 (Rel. 24, Created)
01-FEB-1994 (Rel. 28, Last seq
01-OCT-2000 (Rel. 40, Last ann
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1429
                                                                                                                         Zhou J., Hertz J.M., Leinonen A., Tryggvas "Complete amino acid sequence of the human chain and identification of a single-base converting glycine 521 in the collagenous Alport syndrome patient.";
                                                                                                                                                                                                                                                                                                                                             01-FEB-1994 (Rel. 28, Last sequence update) 01-OCT-2000 (Rel. 40, Last annotation update) COLLAGEN ALPHA 5(IV) CHAIN PRECURSOR.
                                                                                                                                                                                                                                    MEDLINE=94165049; PubMed=8120014; Zhou J., Leinonen A., Tryggvason K. "Structure of the human type IV col
                                                                                                                                                                                                                                                                                                                                    COL4A5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1487
SEQUENCE OF
                                                                                                                                                                                                                                                                                        NCBI_TaxID=9606
                                                                                                                                                                                                                                                                                                             Eukaryota;
                                                                                                                                                                                                                                                                                                                                                                                                                                                        1667
                                                                                                                                                                                 MEDLINE=92316923; PubMed=1352287;
                                                                                                                                                                                           rissuE=Kidney;
                                                                                                                                                                                                                                                                                                   Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                         Homo sapiens (Human)
                                                                                                                                                                                                     SEQUENCE OF 1-910 FROM N.A.,
                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              121
                                                                                                                                                                                                                           . Biol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ц
                                                                                                                                                                                                                                                                                                                                                                                                                                                       ::
RR 1668
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GLKGKRGDSGSPATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           X
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVCM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GLPGSMGPPGTPS--VDHGFLVTRHSQTTDDPLCPPGTKILYHGYSLLYVQGNERAHGQD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EFRSAPFIECHGRGTCNYYANAYSFWLATIERSEMFKKPTPSTLKAGELRTHVSRCQVCM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RCAVCEAPAMVMAVHSQTIQIPQCPNGWSSLWIGYSFVMHTSAGAEGSGQALASPGSCLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYIS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     166;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                             OF 85-1685 FROM N.A.
                                                                                                                                                                                                                           Chem.
                                                                                                                    Chem.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         493
712
813
982
1397
1669
                                                                                                                                                                                                                                                                                                               Metazoa;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               493
712
813
982
1397
9 AA; 1
                                                                                                                patient.";
267:12475-12481(1992).
                                                                                                                                                                                                                          che human type IV collagen 269:6608-6614(1994).
                                                                                                                                                                                                                                                                                                   Primates;
                                                                                                                                                                                                                                                                                                             Chordata;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               71.0%;
68.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          160680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         M
VOESO
O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score
Pred.
                                                                                                                                                                                                       AND VARIANT
                                                                                                                                                                                                                                                                                                   Catarrhini; Hominidae; Homo
                                                                                                                                                                                                                                                                                                             Craniata; Vertebrata; Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                  PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    * * * * *
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          42916B91E52058E9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S H O H H
                                                                                                                                                                      Tryggvason K.;
                                                  Myers J.C.;
triple-helical region and the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                951; DB 1;
No. 7.3e-82;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  human alpha 5 (IV) collagen
-base mutation in exon 23
enous domain to cysteine in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REF.
REF.
REF.
                                                                                                                                                                                                     AS
                                                                                                                                                                                                                                    COL4A5 gene.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 1669;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CRC64;
                                          chain,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1486
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1606
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    240
```

```
glutamic
Hum. Mol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MEDLINE-94133540; PubMed-8301933; Guo C., van Damme B., van Damme Cassiman J.J., Marynen P.; "Differential splicing of COL4A5 cells: a complex mutation in the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDLINE-90252791; PubMed-2339699;
Myers J.C., Jones T.A., Pohjolainen E.R., Kadri A.S., Goddard A.D. Sheer D., Solomon E., Pihlajaniemi T.;
Molecular cloning of alpha 5(IV) collagen and assignment of the to the region of the x chromosome containing the Alport syndrome locus.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                5 gene th
Genomics
                                                                                                           Renieri A., Seri M., Myers J.C., Rizzoni G., de Marchi M.; "De novo mutation in the COL4A5
                                                                                                                                                                                                                                                   Knebelmann B., Deschenes G., Gros F., Hors M.-C., Grunfeld J.-P., Tryggvason K., Gubler M.-C., Antignac C.; "Substitution of arginine for glycine 325 in the collagen alpha 5 (IV) chain associated with X-linked Alport syndrome: characterization of the mutation by direct sequencing of PCR-amplified lymphoblast
                                                                                                                                                                                                                                                                                                                                                                                                 "Single base mutation i conserved cysteine to s Genomics 9:10-18(1991).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Guo
                    MEDLINE=94010948; PubMed=8406498;
                                   VARIANTS
                                                                                                                                                              VARIANT AS GLU-325. MEDLINE-93244772; F
                                                                                                                                                                                                                     Am. J.
                                                                                                                                                                                                                                                                                                                                              VARIANT AS ARG-325.
MEDLINE=92303559; PubMed=1376965;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Zhou J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE-91169492;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE-97338662;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      REVIEW ON VARIANTS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 deletes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE OF 1258-1270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Submitted (SEP-1994) to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Marynen P.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE OF 914-1685 FROM N.A. MEDLINE=90160375; Pubmed=1689491;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE-91169491;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VARIANT AS SER-1564
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Lemmink H.H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  restricted kidney distribution
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Tryggvason K.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Hostikka S.L., Eddy R.L.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "The clinical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Am. J. Hum.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "Identification of a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE-91169491; PubMed-2004755;
Zhou J., Hostikka S.L., Chow L.T., Tryggvason K
"Characterization of the 3' half of the human t
5 gene that is affected in the Alport syndrome.
Genomics 9:1-9(1991).
                                                                                          novo mutation
tamic acid in l
                                                                                                                                                                                                                                      fragments."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Natl.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           van
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Barker
                                     AS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ication of a distinct type IV collagen alpha ed kidney distribution and assignment of its X chromosome-linked Alport syndrome.", tl. Acad. Sci. U.S.A. 87:1606-1610(1990).
                                                                         Genet.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ., Schroeder C.H., Monnens L.A.H.,
al spectrum of type IV collagen mut
9:477-499(1997).
                                       THR-1517;
                                                                                                                                                                                                                     Genet.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          44:1316-1321(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Damme
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1-20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Genet. 46:1024-1033(1990)
 Schroeder
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2; PubMed=1672282;
D.F., Hostikka S.L.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FROM
e B.,
                                                                       Alport syndrome.
1:127-129(1992).
                                                                                                                                                              PubMed=1363780;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PubMed=9195222;
                                                                                                                                                                                                                   51:135-142(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                     serine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   van Damme-Lombaerts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         N.A.
Vanrenterghem
                                   SER-1538 AND GLN-1563
                                                                                                                                                                                                                                                                                                                                                                                                                                     in alpha
 a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         the EMBL/GenBank/DDBJ databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Byers
                                                                                                                                                                                                                                                                                                                                                                                                                     'n
Brunner H.G.,
                                                                                                                                                                                                                                                                                                                                                                                                                                     5(IV) collagen chain
                                                                                                         gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     M.G.,
                                                                                                                                                                                                                                                                                                                                                                                                                    Alport
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (SPLICED FORM)
                                                                                                                                           Pihlajaniemi T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            mRNA in kidney COL4A5 gene of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Υ.,
                                                                                                         converting
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gregory
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Hoeyhtyae M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Devriendt K.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               R.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 mutations
 Nelen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        M.C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               K.;
type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Smeets H.J.M.;
tations.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   van
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            and white blood
an Alport pation
                                                                                                         glycine
 M.R.,
                                                                                                                                           Massella
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   den
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Alport patient
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ν
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Atkin
                                                                                                                                                                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Shows
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Cassiman
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 collagen alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Berghe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Goddard A.D.,
 Zhou
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        C
                                                                                                                                                                                                                                                                                                                                                                                                                                     converting
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Т.В.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 with
                                                                                                           ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ξ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  the
```

FREQUENT

INTERRUPTIONS

QF

```
Renieri A. Bruttini M., Galli L.,
Turco A., Heiskari N., Zhou J., G,
Scolari F., Sessa A., Rizzoni G,
Savi M., Ballabio A., de Marchi M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  "Substitution of A1498D in noncollagen domain of a5(IV) chain associated with adult-onset X-linked Alport syndromum. Mutat. 7:149-150(1996).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Am.
[17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE-96213750; PubMed-8651292;
Barker D.F., Pruchno C.J., Jiang X.,
Benison J.C., Fain P.R., Gregory M.C.
                                                                                                                                                              MEDLINE-99140256; PubMed=10094548;
Plant K.E., Green P.M., Vetrie D., Flinter F.A.;
"Detection of mutations in CO14A5 in patients with Alport syndron thus, mutat. 13:124-132(1999).
Hum. Mutat. 13:124-132(1999).
-i- FUNCTION: TYPE IV COLLAGEN IS THE MAJOR STRUCTURAL COMPONENT GLOMERULAR BASEMENT MEMBRANES (GBM), FORMING A 'CHICKEN-WIRE
                                                                                                                                                                                                                                                                                                                                  Trivelli A.,
                                                                                                                                                                                                                                                                                                                                           Neri T.M., Zanelli P., de Palma G., S. Pignatti G.F., Galli L., Bruttini M.,
                                                                                                                                                                                                                                                                                                                                                                          VARIANTS AS R-174; R-177; R-325; MEDLINE=98112435; PubMed=9452056
                                                                                                                                                                                                                                                                                                                                                                                                                                      Barker D.F., Denison J.C., Atkin C.L., Grego. "Common ancestry of three Ashkenazi-American syndrome and COL4A5 R1677Q.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Tverskaya S., Bobrynina V., Ts
Krasnopolskaya X., Evgrafov O.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VARIANT AS ASP-1498
MEDLINE=96233932; Pu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "X-linked Alport syndrome: an SSCP-based exons of the COL4A5 gene."; Am. J. Hum. Genet. 58:1192-1204(1996).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VARIANTS AS.
MEDLINE=96213754; PubMed=8651296;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "A mutation causing Alport syndrome with common in the western United States."; Am. J. Hum. Genet. 58:1157-1165(1996).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VARIANT AS ARG-1649.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Boye E., Flinter F., Zhou J., Tryggvason K., Bobrow "Detection of 12 novel mutations in the collagenous COL4A5 gene in Alport syndrome patients."; Hum. Mutat. 5:197-204(1995).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           patients with Alport syndrome. Genomics 17:485-489(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Tryggvason K., Haggsma-Schout van Oost B.A., Smeets H.J.M.; "Identification of four novel
                                                                                                                                                                                                                                                         VARIANTS AS, AND VARIANTS
                                                                                                                                                                                                                                                                                                    "Missense mutations in the 
Alport syndrome.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDLINE=97295089;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VARIANT AS GLN-1677
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE=95322976;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VARIANTS AS E-400; V-406; V-638; A-638; R-653; R-796; R-869; R-872 & C-1241
         ISOFORM FOUND IN KIDNEY, IN WHICH 2 EXTRA TRIPLE-HELIX DOMAIN ARE INTRODUCED.

DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN H
                                                    ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELIX STRUCTÜRE WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN NETWORK.
ALTERNATIVE PRODUCTS: 2 ISOFORMS; 1 (SHOWN HERE) AND 2; ARE PROBABLY PRODUCED BY ALTERNATIVE SPLICING. ISOFORM 2 IS A LOT
                                                                                                                  SUBUNIT: THERE ARE SIX TYPE IV COLLAGEN ISOFORMS, ALPHA 1(IV)
                                                                                                                                  MESHWORK TOGETHER WITH LAMININS, PRONIDOGEN.
                                                                                                                                                                                                                                                                                    Suppl. 1:S106-S109(1998).
                                                                                                                                                                                                                                                                                                                                                                                                                           99:681-684(1997).
                                                                                                                                                                                                                                                                                                                                  Pinciaroli A.R.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Haggsma-Schouten
                                                                                                                                                                                                                                                                                                                                                                              PubMed=9452056;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PubMed=8829632;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PubMed=9150741;
son J.C., Atkin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PubMed=7599631;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Galli L.,
                                                                                                                                                                                                                                                                                                                  R., Ragaiolo
COL4A5 gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Tsalykova
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           mutations
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ×
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gusmano
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        W.A.G.,
                                                                                                                                                                                                                                                                                                                                                                                              C-1410;
           IV COLLAGEN HAVE A NONCOLLAGENOUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Tryggvason
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Zanelli P., Neri T., Rossetti S
smano R., Massella L., Banfi G.,
Tryggvason K., Pignatti P.F.,
                                                                                                                                                                                                                                                                                                                                                               Savi M., Rossetti S.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Atkin
.;
                                                                                                                                                  PROTEOGLYCANS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             F.,
                                                                                                                                                                                                                                                                                                                  Renieri A., Mingarelli
o M., Rizzoni G.F., de a
e in patients with X-lia
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gregory
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Roodvoets A.P., Rascher
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       mutation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           tardive
                                                                                                                                                                                                                                                                                                                                                                                              W-1421;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ignatova
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C.L.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           the
                                                                                                                                                                                                                                                                                                                                                                                                                                                           families
                                          G-X-X
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COL4A5
                                                                                                                                                                                                                                                                                                                                                                                              T-1517
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          hearing loss
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Stone
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    syndrome.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      survey over all
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               .
.
                                                                                                                                                  AND
                                                                                                                                                                                                           Alport syndrome.";
                                          REPEATS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                        with Alport
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          gene
                                                                                                                                                  ENTACTIN/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    collagen
                                                                                                                                                                                                                                                                                                                                                                                              AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Harris A.;
ain of the
                                                                                                                                                                                                                                                                                                                                  de Marchi M.
                                                                                                                                                                                                                                                                                                                                                               Turco A.E.,
                                         ; ARE
S A LONGER
S INTO THE
                                                                                                                                                                                                                                                                                                                                                                                              D-1596
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           is
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 s.
```

```
CA54_CANFA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RESULT
                                                                                                                                                                                                                                        mutation in
                                                                                                                                                                                                                                                                                                                    SEQUENCE FROM N.A.
STRAIN=SAMOYED; TISSUE=Kidney;
MEDLINE=94224868; PubMed=8171024;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  tches
                                                                                                                                                                                                                                                                                                        Zheng K.,
                                                                                                                                                                                                                                                                                                                                                                                                                                Eukaryota; Metazoa; Chordata; (Mammalia; Eutheria; Carnivora;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-NOV-1997 (Rel. 35, Created)
01-NOV-1997 (Rel. 35, Last sequence update)
5-JUL-1998 (Rel. 36, Last annotation update)
01LAGEN ALPHA 5(IV) CHAIN (FRAGMENT).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CA54_CANFA Q28247;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1502
                                                                                                                                                                                                                                                                                                                                                                                                                    NCBI_TaxID=9615;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Canis familiaris (Dog).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1682 MKR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1622
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1442
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CAUSE FLEXIBILITY IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH MAY CAUSE FLEXIBILITY IN THE TRIPLE HELICX), AND A SHORT N-TERMINAL TRIPLE-HELICAL 7S DOMAIN.

-!- PTM: PROLINES AT THE THIRD POSITION OF THE TRIPEPTIDE REPEATING UNIT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS.
-!- PTM: TYPE IV COLLAGENS CONTAIN NUMBEROUS CYSTEINE RESIDUES WHICH ARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULFIDE BONDING. 12 OF THESE, LOCATED IN THE NC1 DOMAIN, ARE CONSERVED IN ALL KNOWN TYPE IV COLLAGENS.
-!- DISEASE: DEFECTS IN COLAA5 ARE ASSOCIATED WITH X-LINKED ALPORT SYNDROME (AS). ALPORT SYNDROME IS CHARACTERIZED BY PROCRESSIVE GLOMERULONEPHRITIS, OFTEN ASSOCIATED WITH HIGH-TONE SENSORINEURAL DEAFNESS, SPECIFIC EYE ABNORMALITIES (LENTICONOUS AND MACULAR FLECKS), AND GLOMERULAR BASEMENT MEMBRANE DEFECTS. IN MALES, THE TYPICAL TIME COURSE FOR THE PROGRESS OF ALPORT SYNDROME IS:
TYPICAL TIME COURSE FOR THE PROGRESS OF ALPORT SYNDROME IS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   <u>'</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local
       SUBCELLULAR LOCATION:
                                                                          SUBUNIT: THERE ARE
                                                                                                                                        C. Natl. Acad. Sci. U.S.A. 91:
FUNCTION: TYPE IV COLLAGEN IS
GLOMERULAR BASEMENT MEMBRANES
                               ALPHA 6(IV), EACH OF WITH 2 OTHER CHAINS 1
                                                                                                      NIDOGEN.
                                                                                                                                                                                                                       R., Thorner P.S., Marrano P., Baumal R., McInnes R.R.; ne X chromosome-linked hereditary nephritis: a genetic X-linked hereditary nephritis resulting from a single ion in the gene encoding the alpha 5 chain of collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MXX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EEFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GPDGLQGPPGPPGTSSVAHGFLITRHSQTTDAPQCPQGTLQVYEGFSLLYVQGNKRAHGQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GLKGKRGDSGSPATWT-TRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EEFRSAPFTECHGRGTCNYYANSYSFWLATVDVSDMFSKPQSETLKAGDLRTRISRCQVC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SRCAVCEAPAVVIAVHSQTIQIPHCPQGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMSMQPLKGQSIQPFI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPNNMAPITGRALEPYI 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  165;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1684
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                             Chordata; Craniata; Vertebrata; Carnivora; Fissipedia; Canidae;
                                                                                                                     WITH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  70.4%;
67.9%;
SIX YYPE IV COLLAGEN ISOFORMS, ALPHA 1(IV)
IF WHICH CAN FORM A TRIPLE HELLX STRUCTURE
TO GENERATE TYPE IV COLLAGEN NETWORK.
N: CELL SURFACE (POTENTIAL).
                                                                                                                     LAMININS,
                                                                                                           1. 91:3989-3993(1994).
SEN IS THE MAJOR STRUCTUR
SEANES (GBM), FORMING A '
SAMININS, PROTEOGLYCANS A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               35;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 943.5; DB 1
Pred. No. 3.8e-81;
5; Mismatches 42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRT;
                                                                                                                                   MAJOR STRUCTURAL COMPONENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         754 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           42;
                                                                                                                AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 1685;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                   'CHICKEN-WIRE
                                                                                                                                                                                                                                                                                                                                                                                                                                Canis
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Euteleostomi;
                                                                                                                                                                                                                                                                                          R.R.;
                                                                                                           ENTACTIN/
                                                                                                                                                                                                                         type
                                                                                                                                                                                                                                            model
base
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ۲,
                                                                                                                                                         QF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                  for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1501
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MAY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  e e
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1;
```

밁 Qγ Вb δδ Дb Qy В QУ Дb

(Rel. 15, Created) (Rel. 21, Last seq

sequence

```
RESULT 7
CA14_CAEEL
CA14_CAEEL
AC P17139;
DT 01-AUG-1990
DT 01-MAR-1992
                                                                                                                     밁
                                                                                                                                              Qy
                                                                                                                                                                             В
                                                                                                                                                                                                        20
                                                                                                                                                                                                                                       Ъ
                                                                                                                                                                                                                                                                QY
                                                                                                                                                                                                                                                                                                 В
                                                                                                                                                                                                                                                                                                                            Q
                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                              DISULFID NON_TER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DOMAIN
DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Glycoprotein;
NON_TER
                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE
                                                                                                                     869
                                                                                                                                                                               638
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Extracellular matrix; Connective
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Pfam; PF01413; C4; 2.
Pfam; PF01391; Collagen;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                           120
                                                                                                                                                                                                                                       578
                                                                                                                                                                                                                                                                                                518
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EMBL; U07888;
HSSP; Q04656;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 the European Bioinformatics Institute.
                                                                                                                                                 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                InterPro; IPR000087; -.
                                                                                                                                                                                                                                                                    60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ÷
                                                                                                                                                                                                                                                                                                                             Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IV COLLAGENS.

IV COLLAGENS.

OLISEASE: A DEFECT IN COL4A5 HAS BEEN FOUND TO BE THE CAUSE OF DISEASE: A DEFECT IN COL4A5 HAS BEEN FOUND TO BE THE CAUSE OF CANTINE X-LINKED HEREDITARY NEPHRITIS (HN), A DISEASE SIMILAR TO THAT IN HUMANS (ALSO REFERED TO AS ALPORT SYNDROWE) CHARACTERIZED BY PROGRESSIVE REMAL FALLURE AND NEUROSENSORY DEAFNESS.

SIMILARITY: TO OTHER TYPE IV COLLAGENS.
                                                                                                             EEFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRC
                                                                                                                                                                                     SRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCL 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PTM: PROLINES AT THE THIRD POSITION OF THE TRIPEPTIDE REPEATING UNIT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS.

PTM: TYPE IV COLLAGENS CONTAIN UNDEROUS CYSTEINE RESIDUES WHICH ARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULFIDE BONDING. 12 OF THESE, LOCATED IN THE NCI DOMAIN, ARE CONSERVED IN ALL KNOWN TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS DOMAIN (NCI) AT THEIR C-TERMINUS, FREQUENT INTERRUPTIONS OF THE G-X-Y REPEATS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH ME CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL TRIPLE-HELICAL 7S DOMAIN.
                                                                                                                                                                    SRCAVCERPAVVIAVHSQTIQIPHCPHGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCL
                                                                                                                                                                                                                              DLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMSMEPLKGQSIQPFI
                                                                                                                                                                                                                                              DLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYI 119
                                                                                                                                                                                                                                                                                      GPDGMQGPPGPPGTSSIAHGFLITRHSQTTDAPQCPHGTVQIYEGFSLLYVQGNKRAHGQ
                                                                                                                                                                                                                                                                                                         GLKGKRGDSGSPATWT-TRGFVFTRHSQTTAIPSCPEGTVFLYSGFSFLFVQGNQRAHGQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SWISS-PROT entry is copyright. It is produced through a collable the Swiss Institute of Bioinformatics and the EMBL outst European Bioinformatics Institute. There are no restrictions
                                                                                                                                                                                                                                                                                                                                                          162;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    IPR001442;
                                                                                                                                                                                                                                                                                                                                                                                                                                754 AA;
                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                           531
531
585
585
597
662
696
708
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2AW0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAB60258.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Basement
                                           STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                        530

>754

643

640

603

?

754

714

73537.
                                                                                                                                                                                                                                                                                                                                                                     68.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        membrane; Collagen;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       8
                                                                                                                                                                                                                                                                                                                                                                                                                           MW; D5E321C287FA925B CRC64;
                                                                                                                                                                                                                                                                                                                                                       32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                      TRIPLE-HELICAL REGION.
NONHELICAL REGION (NC1).
OR 640 (BY SIMILARITY).
OR 643 (BY SIMILARITY).
BY SIMILARITY.
OR 754 (BY SIMILARITY).
BY SIMILARITY.
BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                 Score 922.5; DB 7 Pred. No. 1.5e-79;
                                                                                                                                                                                                                                                                                                                                                       Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     tissue; Repeat; Hydroxylation; Collagen; Cell adhesion.
                                        Ą
                                                                                                                                                                                                                                                                                                                                                                                Length
                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            a collaboration
                                                                                                                                                                                                                                                                                                                                                   ۲,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               outstation
                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                       697
                                                                                                                                                                                                                                                                                        577
                                                                                                                                                                                                                                                                                                                      59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MAY
                                                                                                                                                                                                                                                                                                                                                  ۲
```

```
EMBL; J0500, ....
PIR; B34476; B34476.
PTD: S13651; S13651
                                                                                                    or send
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Wilson R., Ainscough R., Anderson K., Baynes C., Berks M., Bonfield J., Burton J., Connell M., Copsey T., Cooper J., Coulson A Craxton M., Dear S., Du Z., Durbin R., Favello A., Fraser A., Fulton L., Gardner A., Green P., Hawkins T., Hillier L., Jier M., Johnston L., Jones M., Kershaw J., Kirsten J., Laisster N., Johnston L., Jones M., Kershaw J., Kirsten J., Laisster N., Jatreille P., Lightning J., Lloyd C., Mortimore B., O'Callaghan M., Latreille P., Lightning J., Lloyd C., Mortimore B., O'Callaghan M., Parsons J., Percy C., Rifken L., Roopra A., Saunders D., Shownkeen Sins M., Smaldon N., Smith A., Smith M., Sonnhammer E., Staden R., Sulston J., Thierry-Mieg J., Thomas K., Vaudin M., Vaughan K., Watson R., Watson A., Weinstock L., Wilkinson-Sproat J., Bohldman D.
                                                                                                                                                                                        the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COLLAGEN
EMB-9 OR
                                                                                                                 entities requires a license agreement (S or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     genes are located on separate chromosomes.";
J. Biol. Chem. 264:17574-17582(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STRAIN-BRISTOL N2;
MEDLINE-94150718; PubMed-7906398;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "Embryonic lethality caused by mutations in collagen of C. elegans.";
Nature 349:707-709(1991).
                                                                                                                                                     modified and
                                                                                                                                                                                                     This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EN
                                                                                                                                                                                                                                                                                                                                                       ÷
                                                                                                                                                                                                                                                                                                                                                                                         +
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Guo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE=90008929; PubMed=2793871;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STRAIN-BRISTOL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE OF 1446-1758 FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Nature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDLINE=91141582; PubMed=1996137; Guo X., Johnson J.J., Kramer J.M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STRAIN-BRISTOL N2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Eukaryota; Metazoa; Nematoda; Chromadorea; Rhabditida; Rhabditidae; Peloderinae; Caenorhabditis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Caenorhabditis elegans.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-NOV-1997
                                                                                                                                                                                                                                                                     UNIT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS.
PTM: TYPE IV COLLAGENS CONTAIN NUMEROUS CYSTEINE RESIDUES WHICH
ARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULFIDE BONDING. 12
THESE, LOCATED IN THE NC1 DOMAIN, ARE CONSERVED IN ALL KNOWN TYP
IV COLLAGENS.
DISEASE: MUTATIONS IN THIS GENE CAUSE TEMPERATURE-SPNETTY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           .2 Mb of contiguous nucleotide sequence from chromosome III of C
sgans.";
                                                                                                                                                                                                                                                                                                                                                                                     DOMAIN (NC1) AT THEIR C-TERMINUS, FREQUI
G-X-Y REPEATS IN THE LONG CENTRAL TRIPLE
CAUSE FLEXIBILITY IN THE TRIPLE HELIX),
TRIPLE-HELICAL 75 DOMAIN.
PTM: PROLINES AT THE THIRD POSITION OF 1
                                                                                                                                                                                                                                                                                                                                                                                                                                DOMAINS.

DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS DOMAIN (NC1) AT THEIR C-TERMINUS, FREQUENT INTERRUPTIONS OF THE DOMAIN (NC1) THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH C-V-V REPEATS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH CANNOT NATIONAL)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FUNCTION: COLLAGEN TYPE IV IS SPECIFIC FOR BASEMENT MEMBRANES. SUBUNIT: TRIMERS OF TWO ALPHA 1(IV) AND ONE ALPHA 2(IV) CHAIN. TYPE IV COLLAGEN FORMS A MESH-LIKE NETWORK LINKED THROUGH INTERMOLECULAR INTERACTIONS BETWEEN 7S DOMAINS AND BETWEEN NC1
                                                                                                                                                                                        European Biòinformatics Institute.
                                                                                                                                                                                                                                                               LETHALITY DURING
                                         X56979; CAA40299.1;
Z27078; CAA81584.1;
J05067; AAB59179.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     368:32-38(1994)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Kramer J.M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          997 (Rel. 35, Last annotation update)
ALPHA 1(IV) CHAIN PRECURSOR.
CLB-2 OR K04H4.1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Caenorhabditis elegans basement membrane (type IV) collagen
                                                                                                                                                   non-profit institu
                                                                                                                                                                                                                                                             NS IN
                                                                                                                                                                        institutions
                                                                                                                                                                                                                                                               EMBRYOGENESIS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                N.A.
                                                                                                                                                 is not removed
                                                                                                                                                                      as long
                                                                                                                                (See http://www.isb-sib.
                                                                                                                                                                                 There are no restrictions
                                                                                                                                                                      as
                                                                                                                                                                                                                                                                                                                                                                                                                        AND A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              basement membrane
                                                                                                                                                 Usage
                                                                                                                                                                    its content
                                                                                                                                                     γď
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Rhabditoidea
                                                                                                                                                   and
                                                                                                                                                                                                                                                                                                                                                                                                                          N-TERMINAL
                                                                                                                                                                                                           EMBL
                                                                                                                                                                                                                          a collaboration
                                                                                                                                                     for
                                                                                                                                .ch/announce/
                                                                                                                                                                                                       outstation
                                                                                                                                                     commercial
                                                                                                                                                                                                                                                                                                                  12 OF
                                                                                                                                                                                                                                                                                                                                                                                                                                           MAY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ×
                                                                                                                                                                    way
```

```
RESULT 8
CA24_ASCSU
                OC OS DIT DI AC
                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                          Qy
                                                                                                                                                                                                                                                                                                                                                   g
                                                                                                                                                                                                                                                                                                                                                                                     Š
                                                                                                                                                                                                                                                                                                                                                                                                                                Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SOUTH THE TRANSPORT OF THE PROPERTY OF THE PRO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
30-MAY-2000 (Rel. 39, Last sequence update)
30-MAY-2000 (Rel. 39, Last annotation update)
COLLAGEN ALPHA 2 (IV) CHAIN PRECURSOR.
Ascaris suum (Pig roundworm) (Ascaris lumbricoides)
Eukaryota; Metazoa; Nematoda; Chromadorea
                                                                                       CA24_ASCSU
P27393;
01-AUG-1992
01-AUG-1992
30-MAY-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CONFLICT
CONFLICT
CONFLICT
CONFLICT
CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CONFLICT
CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DISULFID DISULFID DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DISULFID DISULFID VARIANT VARIANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Repeat;
SIGNAL
                                                                                                                                                                                                                                                                       1755
                                                                                                                                                                                                                                                                                                                                                     1695
                                                                                                                                                                                                                                                                                                                                                                                                                                1635
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1575
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PROPEP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Extracellular matrix; Connective tissue;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Pfam; PF01413; C4; 2.
Pfam; PF01391; Collagen; 22.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                InterPro; IPR000087; InterPro; IPR001442;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CONFLICT
                                                                                                                                                                                                                                                                                                              240
                                                                                                                                                                                                                                                                                                                                                                                         180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 GLKGKRGDSGSPATWT-TRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQ
                                                                                                                                                                                                                                                                       LKNR
                                                                                                                                                                                                                                                                                                              MKKR
                                                                                                                                                                                                                                                                                                                                                                                                                                                    SRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCL 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DLGQPGSCLSKENTMPEMECNMNSVCHVSSRNDYSFWLSTDEPMTPMMNPVTGTAIRPYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GLPGTPGYPGSPGGWAPSRGFTFAKHSQTTAVPQCPPGASQLWEGYSLLYVQGNGRASGQ 1574
                                                                                                                                                                                                                                                                                                                                                   EEFRAVPFIECHGRGTCNYYATNHGFWPSIVDQDKQFRKPMSQTLKAGGLKDRVSRCQVC
                                                                                                                                                                                                                                                                                                                                                                       EEFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVC
                                                                                                                                                                                                                                                                                                                                                                                                                            SRCAVCEVPTQIIAVHSQDTSVPQCPQGWSGMWTGYSFVMHTAAGAEGTGQSLQSPGSCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYI 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Hydroxylation; Glycoprotein;
                                                                                                                                                                                                                                                                       1758
                                                                                                                                                                                                                                                                                                              243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   259
302
366
581
768
813
830
1275
1722
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2195
195
1530
1549
1582
1594
1659
1693
1705
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        402
408
1514
130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                        STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   263
304
404
581
768
814
830
1275
1722
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ?194
1758
1529
1640
1640
1637
1600
1754
1751
402
408
1514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CE00246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     63.1%;
60.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   170857
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   KDAKELKENLEDQEFQVFQ (IN REF. 2).

PVGPA -> LEDQLV (IN REF. 2).

LDN -> AGOR (IN REF. 2).

MISSING (IN REF. 2).

G -> R (IN REF. 2).

P -> R (IN REF. 2).

P -> TR (IN REF. 2).

D -> V (IN REF. 2).

P -> T (IN REF. 2).

P -> T (IN REF. 2).

P -> T (IN REF. 2).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 845.5;
Pred. No. 7.2e
35; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NONHELICAL REGION (NC1).
OR 1637 (BY SIMILARITY).
OR 1640 (BY SIMILARITY).
BY SIMILARITY.
BY SIMILARITY.
OR 1751 (BY SIMILARITY).
OR 1754 (BY SIMILARITY).
BY SIMILARITY.
G 1754 (BY SIMILARITY).
BY SIMILARITY.
BY SIMILARITY.
G -> E (IN MUTANT G34).
C -> E (IN MUTANT G34).
C -> C (IN MUTANT G34).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ₩;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GFPGMPGLAGPPGQSGQNGNPGRPGLSGPPGEGGVNSQGR
KGVKGESGRSGVPGLP -> VSDLSKSDICNIIHLSDVVS
VLRVSLECPDLLDLQGNLDKTETLDDQDSPDHQEKEVSIH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TRIPLE-HELICAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AMINO-TERMINAL
                                  Chromadorea; Ascaridida;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   7083D9AF63E05D45 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Collagen; 'Signal.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; DB 1;
.2e-72;
les 61;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Basement membrane;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       REGION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PROPERTIDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ٠.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length
                                  Ascaridoidea;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (7s
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                   1754
                                                                                                                                                                                                                                                                                                                                                                                                                              1694
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1634
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             59
```

```
20
                                          В
                                                                  δÃ
                                                                                                                                                                 Matches
                                          1515
                                                                                                                                                                                                                                                                        DISULFID DISULFID
                                                                                                                                                                                                                                                                                                                                                                              CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             and
                                                                                                                                                                 SEQUENCE
                                                                                                                                                                                                         VARSPLIC
                                                                                                                                                                                                                                    CARBOHYD
                                                                                                                                                                                                                                                CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                            SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                  Pfam; PF01391; Collagen;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 J. Biol
                                                                                                                                                                                                                                                             DISULFID
                                                                                                                                                                                                                                                                                                                                          DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                           Alternative
                                                                                                                                                                                                                                                                                                                                                                                                                      Hydroxylation; Connective tissue;
                                                                                                                                                                                                                                                                                                                                                                                                                                                            InterPro; IPR001442;
                                                                                                                                                                                                                                                                                                   DISULFID
                                                                                                                                                                                                                                                                                                                                                        DOMAIN
                                                                                                                                                                                                                                                                                                                                                                     DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pettitt J., Kingston I.B.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE=91340768; PubMed=1714907;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NCBI_TaxID=6253;
                                                                                                                                                                                                                                                                                                              ISULFID
                                                                                                                                                                                                                                                                                                                              ISULFID
61 LGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYIS
                                                                  <u>س</u>ا
                                                                                                            Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ie complete primary structure of a nematode alpha 2(IV) collager the partial structural organization of its gene.";

Biol. Chem. 266:15149-16156(1991).

FUNCTION: COLLAGEN TYPE IV IS SPECIFIC FOR BASEMENT MEMBRANES.

SUBUNIT: TRIMERS OF TWO ALPHA 1(IV) AND ONE ALPHA 2(IV) CHAIN.

TYPE IV COLLAGEN FORMS A MESH-LIKE NETWORK LINKED THROUGH

INTERMOLECULAR INTERACTIONS BETWEEN 7S DOMAINS AND BETWEEN NCI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    European Bioinformatics Institute. The by non-profit institutions as long ified and this statement is not removed.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ALTERNATIVE PRODUCTS: 2 ISOFORMS; I (SHOWN HERE) AND II; ARE PRODUCED BY ALTERNATIVE SPLICING.

PRODUCED BY ALTERNATIVE SPLICING.

DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS DOMAIN: (NC1) AT THEIR C-TERMINUS, FREQUENT INTERRUPTIONS OF THE G-X-Y REPEATS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH PRIPLE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL TRIPLE-HELICAL 7S DOMAIN.

TRIPLE-HELICAL 7S DOMAIN.

TRIPLE-HELICAL 7S DOMAIN.

TRIPLE-Y) ARE THYDROXYLATED IN SOME OF ALL OF THE CHAINS.

PTM: TYPE IV COLLAGENS CONTAIN NUMEROUS CYSTEINE RESIDUES WHICH ARE INVOLVED IN INTER-AND INTRAMOLECULAR DISULFIDE BONDING. 12

TRIPLE-THE THE THE THE THE THE THE CHAINS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ٧I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DOMAINS
                                                                GLKGKRGDSGSPATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S16366; S16366.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SWISS-PROT entry is copyright. It is produced through en the Swiss Institute of Bioinformatics and the EN
                                       GLPGPSGPPGPPGPSYKDGFLLVKHSQTSEVPQCPPGMVKLWDGYSLLYIEGNEKSHNQD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  M67507;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COLLAGENS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IPR000087; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LOCATED IN THE NC1 DOMAIN, ARE CONSERVED
                                                                                                                                                               1763
                                                                                                                                                                                                                                 27
27
43
1530
1548
1581
1593
1656
1690
1702
1702
126
                                                                                                                                                                                                                                                                                                                                                                                                        splicing;
                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AAA18014.1;
                                                                                                                                                               AA;
                                                                                                                                                                                                                                                                                                                                                                               1763
                                                                                                                                                                                                                                 1529
1763
17637
1637
1599
1752
17749
1709
1709
                                                                                                           59.4%;
                                                                                                                                                                168526
                                                                                                                                                                                                                                                                                                                                                                                                       Glycoprotein;
                                                                                                                                                                                                                                                                                                                                                                                                                                   23
                                                                                                                                                                                                                                                                                                          7S DOMAIN.
TRIPLE-HELICAL REGION.
NONHELICAL REGION (NC1).
OR 1634 (BY SIMILARITY).
OR 1637 (BY SIMILARITY).
                                                                                                                                                               WW;
                                                                                                                                                                                                                             OR 1749 (BY SIMILARITY).
OR 1752 (BY SIMILARITY).
BY SIMILARITY.
N-LINKED (GLCNAC...) (POTENTIAL).
O-LINKED (GLYCOSAMINOGLYCAN) (IN FO
                                                                                                           Pred.
                                                                                                            Score 796.5;
Pred. No. 3.
                                                                                                                                                                                                      (POTENTIAL).
GEQGPRGPQGPPGPVPSTGAKGTIIGPEGAPGMKGEK ->
                                                                                                                                                                                        GDIGPAGPPGPPGPREFTGSGSIVGPRGHSGDKGVK (IN
                                                                                                                                                                                                                                                                                                                                                                              COLLAGEN ALPHA
                                                                                                                                                                                                                                                                                                                                                                                             POTENTIAL
                                                                                                                                                                             SOFORM
                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                   SIMILARITY
                                                                                                                                                             304F528BC06AAE0D CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                    Basement membrane; Repeat;
                                                                                                           No.
                                                                                                                                                                                                                                                                                                                                                                                                      Signal.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               There are no rest
                                                                                                           .1e-67
                                                                                                                       DB 1;
                                                                                                                                                                                                                                                                                                                                                                              2(IV) CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Usage
                                                                                                                      Length
                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       bу
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  IN ALL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       and for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EMBL
                                                                                                                                                                                                                               (IN FORM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NDING. 12 OF
KNOWN TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ø
                                                                                            ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                    Collagen;
                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        in no way
                                       1574
                                                                  60
                                                                                                                                                                                                                               II)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                on
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MAY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     no
                                                                                            2
```

```
В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 9
CA24_CAEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CA24_CAEEL
P17140;
01-AUG-1990
                                                                                                                                                                                                                                                                                                                                                          Sibley M.H., Graham P.L., von Mende N., Kramer J.M.; "Mutations in the alpha 2(IV) basement membrane collagen gene of Caenorhabditis elegans produce phenotypes of differing severities EMBO J. 13:3278-3285(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sibley M.H., Johnson J.J., Mello C.C., "Genetic identification, sequence, and Caenorhabditis elegans alpha 2(IV) coll J. Cell Biol. 123:255-264(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Caenorhabditis elegans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-AUG-1990 (Rel. 15, Created)
01-CCT-1994 (Rel. 30, Last sequence update)
30-MAY-2000 (Rel. 39, Last annotation update)
COLLAGEN ALPHA 2(IV) CHAIN PRECURSOR.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1753 IR 1754
             -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            genes are located on separate chromosomes.";
J. Biol. Chem. 264:17574-17582(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Guo X., Kramer J.M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STRAIN=BRISTOL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STRAIN=BRISTOL N2;
MEDLINE=94012964; PubMed=7691828;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Rhabditidae; Peloderinae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Eukaryota; Metazoa;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LET-2 OR CLB-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1575 LGHAGSCLSRFSTMPFLFCDVNNVCNYASRNDKSYWLSTTA--PIPMMPVSEGGIEPYIS
                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE=94320591; PubMed=8045258;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE=90008929; PubMed=2793871;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRELIMINARY SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NCBI_TaxID=6239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1693
                                                                                                                                                                                                                                                                                                                                                                                                                                                 /ARIANTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181
                                           PIM: PROLINES AT THE THIRD POSITION OF THE TRIPEPTIDE REPI
UNIT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS
PYM: TYPE IV COLLAGENS CONTAIN UNMEROUS CYSTEINE RESIDUES
ARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULFIDE BONDII
THESE, LOCATED IN THE NC1 DOMAIN, ARE CONSERVED IN ALL KNO
                                                                                                                         ALTERNATIVE PRODUCTS: 2 ISOFORMS; I (SHOWN HERE) AND II; ARE PRODUCED BY ALTERNATIVE SPLICING.

TISSUE SPECIFICITY: FORM I IS PREDOMINANT IN EMBRYOS AND FORM II IS PREDOMINANT IN THE LARVAE AND ADULTS.

DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS DOMAIN (NC1) AT THEIR C-TERMINUS, FREQUENT INTERRUPTIONS OF THE GAY'S REPEATS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (MHICH MC).

CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL TRIPLE-HELICAL 7S DOMAIN.
                                                                                                                                                                                                                                                                                                               FUNCTION: COLLAGEN TYPE IV IS SPECIFIC FOR BASEMENT MEMBRANES SUBUNIT: TRIMERS OF TWO ALPHA 1(IV) AND ONE ALPHA 2(IV) CHAIN TYPE IV COLLAGEN FORMS A MESH-LIKE NETWORK LINKED THROUGH
             DISEASE: MUTATIONS IN
                                                                                                                                                                                                                                                                                DOMAINS
                                                                                                                                                                                                                                                                                                 INTERMOLECULAR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            two Caenorhabditis elegans basement membrane (type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EFRASPFLECHG-RGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ķ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DERATPFIECNGARGTCHYFANKFSFWLTTIEDDQQFRIPESETLKAGSLRTRVSRCQVC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RCAVCEAPANVIAVHSQTIQIPNCPNGWNSLWIGYSFAMHTGAGAEGGGQSLSSPGSCLE
                                COLLAGENS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STANDARD;
                                                                                                                                                                                                                                                                                                   INTERACTIONS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Nematoda; Chromadorea; Rhabditida; Rhabditoidea; rinae; Caenorhabditis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               OF.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1495-1758
               LET-2 ARE
                                                                                                                                                                                                                                                                                                 BETWEEN 7S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              collagen
             GENERALLY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1758
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Kramer J.M.;
alternative splicing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               z
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ΑA
                                                                                                                                                                                                                                                                                                   DOMAINS
               EMBRYONIC
                                              IN ALL KNOWN
                                                                                                                                                                                                                                                                                                   BETWEEN
                                                                                                                                                                                                                                                                                                                                                                                 severities.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IV)
               LETHAL
                                                                BONDING.
                                                                                               CHAINS
                                                                                                             REPEATING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               collagen
                                                                             WHICH
                                                                                                                                                                                                                                                                                                   NCI
                                              TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1632
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1692
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             239
                                                                                                                                                                 MAY
                                                              e
P
```

This

SWISS-PROT entry is copyright. It is produced through a collaboration en the Swiss Institute of Bioinformatics and the EMBL outstation -

n no way

on.

:: = ::

```
Matches
                                                                                                                                                                                                                                                                    Query Match
Best Local Similarity
                          1682
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VARIANT
VARIANT
VARIANT
VARIANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DISULFID DISULFID DISULFID DISULFID DISULFID DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DISULFID
CARBOHYD
VARSPLIC
                                                                                                                                                                                                   1504
                                                                                                                                                                                                                                                                                                                                            VARIANT
CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                  VARIANT
VARIANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VARIANT
VARIANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             InterPro; IPR000087; -.
InterPro; IPR001442; -.
Pfam; PF01413; C4; 2.
Pfam; PF01391; Collagen; 23.
Hydroxylation; Connective tissue; B.
Alternative splicing; Glycoprotein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EMBL; Z22964; CAA80536.1; -.
EMBL; Z22964; CAA80537.1; -.
EMBL; J05066; AAA27989.1; -.
EMBL; U22327; AAA64312.1; ALT_SEQ.
PIR; A34476; A34476.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      use by non-profit institutions as long as its content is in modified and this statement is not removed. Usage by and for contentities requires a licence according
                                                                                                                                           1564
                                                                                                                                                                                                                                                                                                                                                                                                                                             VARIANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         or send an
                                                                                                                                                                                                                                                                                                                                                                         VARIANT
                                                                                                                                                                                                                                                                                                                                                                                     VARIANI
                                                                                                                                                                                                                                                                                                                                                                                                                                                               VARIANI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DOMAIN
                                                                                                                112
                                                                                                                                                                      52
KIISRCQVCMKK---RH
                                     GRALEPYISRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQA 171
                                                                                                                                                        GNQRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPIT 111
                         PSSPGSCLEDFRATPFIECNGARGSCHYFANKFSFWLTTIDNDSEFKVPESQTLKSGNLR 1741
                                                                                                                                        GNEKSHNQDLGHAGSCLQRFSTMPFLFCDFNNVCNYASRNEKSYWLSTSEAIP--MMPVN 162
                                                                                                                                                                                               GLDGQPGGPGAPGLPGAPGAAGPAYRDGFVLVKHSQTTEVPRCPEGQTKLWDGYSLLYIE 1563
                                                                                                                                                                                                                          GLKGKRGDSGSP-----ATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQ 51
                                                                                EREIEPYISRCAVCEAPANTIAVHSQTIQIPNCPAGWSSLWIGYSFAMHTGAGAEGGGQS
                                                                                                                                                                                                                                                         140;
                                                                                                                                                                                                                                                                                                                                1003
1125
1152
1286
1682
1758
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1528
1546
1579
1591
1654
1688
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       email to license@isb-sib.ch)
                                                                                                                                                                                                                                                                                                                                                                                                                877
904
                                                                                                                                                                                                                                                                                                                                                                                                                                              366
570
588
597
690
737
                                                                                                                                                                                                                                                         Conservative
                                                                                                                                                                                                                                                                                                                                ΑĄ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1758
1758
42
1527
1527
1758
1635
1635
1632
1597
1750
                                                                                                                                                                                                                                                                                                                                                         1003
1125
1152
1286
                                                                                                                                                                                                                                                                                                                                                                                                                  48
366
570
588
597
690
690
737
737
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   license agreement (See http://www.isb-sib.ch/announce,
                                                                                                                                                                                                                                                                    57.6%;
54.5%;
                                                                                                                                                                                                                                                                                                                              1.67750
 244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     OR 1632 (BY SIMILARITY).
OR 1635 (BY SIMILARITY).
BY SIMILARITY).
BY SIMILARITY.
OR 1747 (BY SIMILARITY).
OR 1750 (BY SIMILARITY).
BY SIMILARITY.
O-LINKED (GLYCOSAMINOGLYCAN) (POTENTIAL).
OR 1750 GENTERPREPTGSGSIVGPRGNPGEKGDK. -> G
                                                                                                                                                                                                                                                         42;
                                                                                                                                                                                                                                                                                                                                ₩,
                                                                                                                                                                                                                                                                                                                                          ISOFORM II)
G -> E (IN)
A -> E (IN)
G -> E (IN)
G -> R (IN)
G -> R (IN)
G -> R (IN)
G -> E (IN)
G -> E (IN)
G -> D (IN)
                                                                                                                                                                                                                                                      Score 772.5; DB 1
Pred. No. 5.7e-65;
2; Mismatches 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GDLGSVGPPGPPGPREFTGSGSIVGPRGNPGEKGDK
DIGAMGPAGPPGPIASTMSKGTIIGPKGDLGEKGEK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TRIPLE-HELICAL REGION.
NONHELICAL REGION (NC1).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COLLAGEN ALPHA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DOMAIN.
                                                                                                                                                                                                                                                                                                                              97EE3F3DBB2D2AC5 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Basement membrane; Repeat; Collagen;
n; Signal.
                                                                                                                                                                                                                                                                                                                                                    IN MN101; 100% LETHAL).

IN MN129; 100% LETHAL).

IN MN143; 100% LETHAL).

IN G30; 90% LETHAL).

IN E1470; 94% LETHAL).

IN MN139; 20% LETHAL).

IN MN139; 20% LETHAL).

IN MN147; 7% LETHAL).

IN MN147; 7% LETHAL).

IN G37 AND B246; 9% LETHAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MN109; 37% LETHAL).
MN103 AND MN151; 96
MN152; 50% LETHAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MN126;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MN114;
                                                                                                                                                                                                                                                                                   DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     2(IV) CHAIN.
                                                                                                                                                                                                                                                         60;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              73% LETHAL)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  100% LETHAL).
                                                                                                                                                                                                                                                                                 Length 1758;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    96% LETHAL).
                                                                                                                                                                                                                                                        15;
                                                                                                                                                                                                                                                      Gaps
                                                                                1683
                                                                                                                                                                                                                                                        4
```

Š

δ B δÃ

В Qy 밁 Š

В

```
CA24_MOUSE
AC POB122; Q61.
CA24_MOUSE
ID CA24_ID CA24_ID
ID 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Вþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     P08122; Q61375;
01-AUG-1988 (Rel. 08, Created)
01-FEB-1991 (Rel. 17, Last sequence update)
30-MAY-2000 (Rel. 39, Last annotation update)
  MEDLINE=89071759;
Burbelo P.D., Mar
                                                                                                           MEDLINE=85296379; PubMed=3839908; Kurkinen M., Bernard M.P., Barlow "Characterization of 64., 123 and alpha 2(IV) collagen gene.";
                                                                                                                                                                                                                                                    SEQUENCE OF 1041-1489 FROM N.A. MEDLINE=87005245; PubMed=3758345; Wogeli G., Horn E., Carter J., Kaytes P.S.; Proposed alignment of helical interruptions the basement membrane (type IV) collagen."; FEBS Lett. 206:29-32(1986).
                                                                                                                                                                                                                                                                                                                                                                                                               "Extensive homology between the carboxyl-terminal alpha 1(IV) and alpha 2(IV) collagen."; C. Biol. Chem. 262:8496-8499(1987).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Saus J., Pihlajaniemi T.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE-87054581; PubMed=3780963;
Schwarz-Magdolen U., Oberbaeumer I., Kuehn K.;
"cDNA and protein sequence of the NC1 domain of
collagen IV and its comparison with alpha 1(IV).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 "Structure of mouse type IV collagen. Amino-acid sequence terminal 511-residue-long triple-helical segment of the alchain and its comparison with the alpha 1(IV) chain."; Eur. J. Biochem. 157:49-56(1986).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=89066738; PubMed=3198626;
Kaytes P., Wood L., Theriault N., Ku
"Head-to-head arrangement of murine
J. Biol. Chem. 263:19274-19277(1988)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "The complete primary structure of Alignment with mouse alpha 1(IV) co
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A. MEDLINE=89197933;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1742 TRVSRCQVCVKSTDGRH
                                               SEQUENCE OF 1-60 FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE OF 1481-1707 FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE OF 1480-1707 FROM N.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Schwarz U., Schuppan D., Deutzmann R., Timpl R., F
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MEDLINE=86220192;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Pihlajaniemi T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NCBI_TaxID=10090;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mus musculus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COLLAGEN ALPHA 2(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE=87250460;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Biol. Chem. 264:6318-6324(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       OF 970-1480 FROM N.A.
86220192; PubMed=3011432;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        OF 1-33 FROM N.A.
                                                                                                                                                                                                      OF 964-1003; 1005-1085 AND 1087-1109 FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Quinones
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     208:203-207(1986).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (Mouse)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          chuppan D., Oberbaeumer
Timpl R., Kuehn K.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Kurkinen M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                s.,
  PubMed=3200851;
in G.R., Yamada
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PubMed=2703491;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PubMed=3597383;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Chordata;
Rodentia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mackrell A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1758
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Blumberg
                                                                                                                     Barlow D.P., Chow ....
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRECURSOR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Craniata; Vertebrata; Euteleostomi; Sciurognathi; Muridae; Murinae; Mus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           collagen."
    Υ.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Kurkinen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          В.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              mouse alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Blumberg B.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1707
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Barlow D.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Glanville
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ۷Ι
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          M., Vogeli G.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    collagen
                                                                                                                                                                                                                                                                                                 in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                the alpha .";
                                                                                                                                                                                                                                                                                                    the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Muthukumaran G.
                                                                                                                                        exons
                                                                                                                                                                                                                                                                                                                                                                                                                                                               peptides of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Quinones
                                                                                                                                                                                                           z
                                                                                                                                                                                                                                                                                                 two
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                genes.";
                                                                                                                                                                                                             >
                                                                                                                                        in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              alpha
                                                                                                                                                                                                                                                                                                    subunits
                                                                                                                                      the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              of the
lpha 2(I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   2-chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ŝ
                                                                                                                                        mouse
                                                                                                                                                                                                                                                                                                                                                                                                                                                               mouse
                                                                                                                                                                                                                                                                                                    of.
```

```
SOFTER TREETER TO THE TREETER TO THE TREETER TO THE TREETER THE THE TREETER THE THE TREETER THE TREETE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CCCCCCCCCCCCCCRRR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EMBL; M23334; AAA
EMBL; M23333; AAAA
EMBL; M24695; AAA1;
EMBL; J046448; AAA3
EMBL; X04647; CAA21;
EMBL; X04647; CAA27;
EMBL; X024410; CAA27;
EMBL; X02896; CAA266;
EMBL; X02899; CAA2665;
MBL; X02898; CAA2665;
MBL; X02898;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            This SWI
                                                                                                                                                                                       CONFLICT
                                                                                                                                                                                                                                                                                                 DOMAIN
DOMAIN
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -!- SUBDUTE: THERE ARE SIX TYPE IV COLLAGEN ISOFORMS, ALPHA 1(IV)-
ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELIX STRUCTURE
WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN NETWORK.
WITH 2 OTHER CHAINS OF TYPE IV COLLAGEN NETWORK.

-!- DOMAIN (NC1) AT THEIR C-TERMINUS, FREQUENT INTERRUPTIONS OF THE
G-X-Y REPEATS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH MAY
CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL
TRIPLE-HELICAL 7S DOMAIN.

-!- PTM: PROLINES AT THE THIRD POSITION OF THE TRIPEDTIDE REPEATING
UNIT (G-X-Y) ARE HYDROXYLATED IN SOME OF SALL OF THE CHAINS.

-!- PTM: TYPE IV COLLAGENS CONTAIN NUMEROUS CYSTEINE RESIDUES WHICH
ARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULFIDE BONDING. 12 OF
THESE, LOCATED IN THE NC1 DOMAIN, ARE CONSERVED IN ALL KNOWN TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "Alpha 1(IV) and alpha 2(IV) collagen genes are regulated by a bidirectional promoter and a shared enhancer.", Proc. Natl. Acad. Sci. U.S.A. 85:9679-9682(1988).
-i- FUNCTION: TYPE IV COLLAGEN IS THE MAJOR STRUCTURAL COMPONENT GLOMERULAR BASEMENT MEMBRANES (GBM), FORMING A 'CHICKEN-WIRE'
                         CONFLICT
                                                                              CONFLICT
                                                                                                                                  CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PROPEP
CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            entities requires a license agreement (S or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 use by non-profit institutions as long modified and this statement is not removed.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -
                                                                                                                                                                                                                                            CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              fam; PF01391; Collagen;
Extracellular matrix; Con
Glycoprotein; Basement me
                                                                                                                                                                                                                                                                              CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MGD; MGI:88455; Col4a2.
InterPro; IPR000087; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                [nterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      European Bioinformatics Institute.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NIDOGEN.
SUBUNIT: THERE ARE SIX TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MESHWORK TOGETHER WITH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IV COLLAGENS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SWISS-PROT entry is copyright. It is produced sen the Swiss Institute of Bioinformatics and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IPR001442;
                                                       138
1270
1051
1051
1097
1171
1179
1241
1328
1573
                                                                                                                                                                                                                                                                                                    26
184
184
1480
1499
1532
1544
1607
1641
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CAB51614.1;
CAA26657.1;
CAA26658.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAA51627.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AAA37341.1;
CAA27998.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AAA51626.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CAA28308.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AAA50293.1;
AAA37438.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CAA26655.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AAA51626.1;
                                                    1623
  167391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Connective tissue; Repeat;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   membrane; Collagen; Signal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           19.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 JOINED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           LAMININS, PROTEOGLYCANS
                                                                                                                                                                                                                                                                                                                                                    COLLAGEN ALPHA 2(IV) CHAIN TRIPLE-HELICAL REGION (NC1).
NONHELICAL REGION (NC1).
OR 1585 (BY SIMILARITY).
OR 1588 (BY SIMILARITY).
BY SIMILARITY).
BY SIMILARITY.
                      OR 1585 (BY SIMILARIT
OR 1588 (BY SIMILARIT)
BY SIMILARITY:
OR 1700 (BY SIMILARIT)
OR 1703 (BY SIMILARIT)
OR 1703 (BY SIMILARIT)
BY SIMILARITY:
N-LINKED (GLCNAC...
N-LINKED (GLCNAC...
P-> R (IN REF. 6).
S-> G (IN REF. 6).
S-> G (IN REF. 6).
C-> E (IN REF. 6).
P-> A (IN REF. 4).
Y-> H (IN REF. 4).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AMINO-TERMINAL PROPERTIDE
                                                                                                                                                                                                                                                                                               1700 (BY SIMILARITY).
1703 (BY SIMILARITY).
SIMILARITY.
  LA565159605FD508
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          There are no rest
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    as
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               and the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Hydroxylation
CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     through
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    λq
                                                                                                                                                                                                                                            (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (7S DOMAIN)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ENTACTIN/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EMBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          is
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        on.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             way
```

```
RESULT 11
CA24_HUMAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            рь
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      B
   Query Match
Best Local Sin
Matches 140;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-AUG-1988
01-FEB-1991
01-OCT-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1644
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1526
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1466
                                                                                                                                       MEDLINE-87219158; runsections of the Missiska S.L., Kurkine M., Trygyvason K.;

Nucleotide sequence coding for the human type IV collagen alpha 2

"Nucleotide sequence coding for the human type IV collagen alpha 2

chain cDNA reveals extensive homology with the NC-1 domain of alpha 1

chain cDNA reveals extensive homology with the NC-1 domain of alpha 1
                                                                                                                                                                                                                                                               "Human basement membrane collagen (type IV). The of the alpha 2(IV) chain and its comparison with chain reveals deletions in the alpha 1(IV) chain.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CA24_HUMAN P08572;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1703
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1584
                            "Human collagen gene
alpha 2 (IV) chains
Proc. Natl. Acad. So
                                                                                                                                                                                                       SEQUENCE OF 1254-1712 FROM N.A. MEDLINE=87219158; PubMed=358267
                                                                                                                                                                                                                                                                                                                       TISSUE=Placenta;
MEDLINE=88151998; PubMed=3345760;
                                                                                                                                                                                                                                                                                                                                                                                  Hostikka S.L., Tryggvason K.;
"The complete primary structure of the collagen and comparison with the alpha J. Biol. Chem. 263:19488-19493(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COL4A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COLLAGEN ALPHA
                                                                                                                                                                                                                                                                                                              Brazel D., Pollner R.,
                                                                                                                                                                                                                                                                                                                                                         SEQUENCE OF 1-1042 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE=89066769; PubMed=3198637;
                                                                       Griffin C.A.,
                                                                                                       SEQUENCE OF 1451-1485 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Homo sapiens
                                                                                      MEDLINE=87092438; PubMed=3025878;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ۳
                                                                                                                                                                                                                                                      n reveals deletions in the al
J. Biochem. 172:35-42(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GLKGKRGDSGSPATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CMK 1705
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CMK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DFRATPFIECNGGRGTCHYFANKYSFWLTTI-PEQNFQSTPSADTLKAGLIRTHISRCQV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EFRASPFLECH-GRGTCNYYSNSYSFWLASLNPERMFRK-PIPSTVKAGELEKIISRCQV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYIS 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GRPGSPGLPGMPGRSVSIGYLLVKHSQTDQEPMCPVGMNKLWSGYSLLYFEGQEKAHNQD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RCSVCEAPAVAIAVHSQDTSIPHCPAGWRSLWIGYSFLMYTAAGDEGGGQSLVSPGSCLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LGLAGSCLARFSTMPFLYCNPGDVCYYASRNDKSYWLSTTA--PLPMMPVAEEEIKPYIS
OF.
                                                                                                                                  ot with the collagenous 216:281-286(1987).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (Rel. 17, Last sequence update) (Rel. 40, Last annotation update) PHA 2(IV) CHAIN PRECURSOR.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                        Emanuel B.S., Hansen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STANDARD;
                           genes encoding basement membran
ains map to the distal long arm
d. Sci. U.S.A. 84:512-516(1987).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       08, Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    56.8%;
57.6%;
 FROM N.A
                                                                                                                                                                                                                                                                                                             Oberbaeumer I., Kuehn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      37;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 760
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       760.5;
No. 7.
                                                                        J.R.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1712
                                                                                                                                                                                                                                                                                                                                                                                                   alpha 2 chain of
1(IV) chain.";
                                                         membrane alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .5e-64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 1;
                                             of
                                                                                                                                                                                                                                                                  amino acid sequence the alpha 1(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 1707;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                             chromosome
                                            Myers J.C.;
a 1 (IV) and
mosome 13.";
                                                                                                                                                                                                                                                                                                                                                                                                                 human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        5;
                                                                                                                                                                                                                                                                                                                                                                                                                 type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1643
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1583
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1525
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  238
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Δ
```

```
NIDOGEN.

**IDOGEN**

**IDOGEN**

**IDOGEN**

**ILPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELIX STRUCTURE ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELIX STRUCTURE WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN NETWORK.

**IDOMAIN**

**IDOMAIN**

**INCOLLAGEN OF THE IV COLLAGEN HAVE A NONCOLLAGENOUS OF THE CHAINS OF THE LONG CENTRAL TRIPLE HELICAL DOMAIN (WHICH MAY CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL TRIPLE-HELICAL TO DOMAIN (WHICH MAY CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL TRIPLE-HELICAL 75 DOMAIN.

**ITIPLE-HELICAL 75 DOMAIN.*

**ITIPLE-HE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Siebold B., Deutzmann R., Kuehn K.;
"The arrangement of intra- and intermolecular disulfide bonds in carboxyterminal, non-collagenous aggregation and cross-linking do of basement-membrane type IV collagen.";
Eur. J. Biochem. 176:617-624(1988).
-I- FUNCTION: TYPE IV COLLAGEN IS THE MAJOR STRUCTURAL COMPONENT GLOMERULAR BASEMENT MEMBRANES (GBM), FORMING A 'CHICKEN-WIRE'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE=93305049; PubMed=8317999;
Fischer G., Schmidt C., Opitz J., Cully Z.,
"Identification of a novel sequence element
region of human collagen type IV genes, invo
divergent transcription.";
Blochem. J. 292:687-695(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "The genes for the alpha 1(IV) and alpha 2(IV) c basement membrane collagen type IV are arranged separated by a bidirectional promoter of unique SMBO J. 7:2687-2695(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     collagen are divergently encoded on opposite DNA strands and have overlapping promoter region."; J. Biol. Chem. 263:17217-17220(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                "Myers J.C., Howard P.S., Jelen A.M., Dion A.S., Macarak E.J.;
"Duplication of type IV collagen COOH-terminal repeats and species-
specific expression of alpha 1(IV) and alpha 2(IV) collagen genes.";
J. Biol. Chem. 262:9231-9238(1987).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Soininen R., Huotari M., Hostikka S.L., Prockop D.J., Tryggvason K. "The structural genes for alpha 1 and alpha 2 chains of human type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE OF 1-33 FROM N.A. MEDLINE-89034231; PubMed=3182844;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE-89005112; PubMed-2844531;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE OF 1480-1535; 1545-1614;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE OF 1-33 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE OF 1-33 PMEDLINE=89030632;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDLINE=87250571; PubMed=2439508;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GLOMERULAR BASEMENT MEMBRANES (GBM), FORMING A MESHWORK TOGETHER WITH LAMININS, PROTEOGLYCANS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Pollner R., Kuehn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PubMed=2846280;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 z
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   χ
:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1617-1701
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ully Z., Kuehn K., Poes
element in the common
nes, involved in the re
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              disulfide bonds in the and cross-linking domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ) chains of humaned head head to-head a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1705-1712
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AND ENTACTIN/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Poeschl
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                on promoter regulation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          E . ,
                                                                                                                                                                                                                                                    MAY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                of
                                                          õ
```

European SWISS-PROT entry is copyright. It is produced through een the Swiss Institute of Bioinformatics and the EV European Bioinformatics Institute. There are no restr non-profit institutions as long and and this statement is not removed. s requires a license agreement (See lan email to license@isb-sib.ch). as its content http://www.isb-sib.ch/announce/ restrictions and EMBL a collaboration for outstation

entities requires or send an email t X05562; CAA29076.1; X05610; CAA29098.1; J02760; AAA58422.1; M45963; AAA53099.1; X12784; CAA31275.1; J04217; AAA53097.1; A32024

```
RESULT
CA64_HU
 δõ
                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                              QΥ
                                                                                                                                                                                                                                                                                                                  рь
                                                                                                                                                                                                                                                                                                                                    δÃ
                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                           Qy
                                                                                                                                                                                                                                                                                                                                                                                                 В
                                                                                                                                                                                                                                                                                                                                                                                                                    ОĀ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local
                                                                                                                              54_HUMAN
CA64_HUMAN
C14031;
01-NOV-1997 (Rel
01-NOV-1997 (Rel
01-OCT-2000 (Rel
CCLLAGEN ALPHA 6
  TISSUE=Eye, and Kidney;
TISSUE=Eye, and Kidney;
MEDLINE=94171779; PubMed=8125972;
MEDLINE=94171779; PubMed=8125972;
Oohashi T., Sugimoto M., Mattei M.-G.,
"Identification of a new collagen IV characterism and assignment of the gene to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CONFLICT
CONFLICT
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DOMAIN
DOMAIN
DOMAIN
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
CARBOHYD
CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PROPEP
CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                  1471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CONFLICT
                                                                             Eukaryota; Metazoa;
Mammalia; Eutheria;
NCBI_TaxID=9606;
                                                                                                                                                                                                                                    1708
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Glycoprotein; Basement
SIGNAL 1 25
                                                                                                            Ното
                                                                                                                                                                                                                                                                                                                  1589
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                InterPro; IPR000087; -.
InterPro; IPR001442; -.
Pfam; PF01413; C4; 2.
Pfam; PF01391; Collagen;
                                                                                                                                                                                                                                                                           1649
                                                                                                                                                                                                                                                                                                                                                          1531
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Extracellular matrix;
                                                           SEQUENCE FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MIM; 120090;
                                                                                                                                                                                                                                                       239
                                                                                                                                                                                                                                                                                                                                      121
                                                                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                                     1 GLKGKRGDSGSPATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQD
                                                                                                            sapiens
                                                                                                                                                                                                                                   CMK 1710
                                                                                                                                                                                                                                                       CMK
                                                                                                                                                                                                                                                                          DFRATPFIECNGGRGTCHYYANKYSFWLTTI-PEQSFQGSPSADTLKAGLIRTHISRCQV
                                                                                                                                                                                                                                                                                                                             RCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLE 180
                                                                                                                                                                                                                                                                                                                                                         LGLAGSCLARFSTMPFLYCNPGDVCYYASRNDKSYWLSTTA--PLPMMPVAEDEIKPYIS
                                                                                                                                                                                                                                                                                                                                                                   LGTLGSCLQRETTMPELECNVNDVCNEASRNDYSYWLSTPALMPMNMAPITGRALEPYIS
                                                                                                                                                                                                                                                                                                                                                                                                 GRPGSPGLPGMPGRSVSIGYLLVKHSQTDQEPMCPVGMNKLWSGYSLLYFEGQEKAHNQD 1530
                                                                                                                                                                                                                                                                                              EFRASPFLECH-GRGTCNYYSNSYSFWLASLNPERMER-KPIPSTVKAGELEKIISRCQV
                                                                                                                                                                                                                                                                                                                  RCSVCEAPAIAIAVHSQDVSIPHCPAGWRSLWIGYSFLMHTAAGDEGGGQSLVSPGSCLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          184
184
1485
1504
1537
1537
1612
1612
1658
1658
1658
1658
1658
1658
1701
                                                                                                                                         (Rel.
(Rel.
(Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                         (Human).
Chordata;
assignment r COL4A5.";
                                                                                                                               Rel. 35,
Rel. 35,
Rel. 40,
                                                                                                                                                                                  STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ÀΑ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   183
1712
1484
1593
1593
1555
1705
1705
1665
13705
13705
                                                                                                                               CHAIN PRECURSOR.
                                                                                                                                                                                                                                                                                                                                                                                                                                                 56.4%;
58.0%;
                                                                                                                                         Created)
Last sequence
Last anno
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          167535
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Connective
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              membrane;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  20.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TRIPLE-HELICAL REGION.

NONHELICAL REGION (NC1).

OR 1590 (BY SIMILARITY).

OR 1593 (BY SIMILARITY).

OR 1705 (BY SIMILARITY).

OR 1705 (BY SIMILARITY).

OR 1708 (BY SIMILARITY).

OR 1708 (BY SIMILARITY).

N-LINKED (GLCNAC...).

R -> P (IN REF. 2).

A -> G (IN REF. 2).

M -> G (IN REF. 5).

M -> G (IN REF. 9).

H -> G (IN REF. 9).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ¥.
                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 755.5; DB 1;
Pred. No. 2.2e-63;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AMINO-TERMINAL
COLLAGEN ALPHA
                                                                                        Catarrhini;
                                                                                                                                                                                                                                                                                                                                                                                                                                        Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             tissue; Repeat; Hydroxylation; Collagen; Signal.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2582A17847890037
                                                                                                                                                                                  1678 AA
         chain, alpha
to chromosome
                             Ninomiya Y.;
                                                                                        Hominidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PROPERTIDE 2(IV) CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CRC64;
                                                                                                   Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (7S
         by cDI
which
                                                                                                                                                                                                                                                                                                                                                                                                                                                            1712;
                                                                                                                                                                                                                                                                                                                                                                                                                                        5
                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                  1648
                                                                                                                                                                                                                                                                                                                                                          1588
                                                                                                                                                                                                                                                                                                                                                                                                                     60
```

QΥ 멍

Db

```
SO THE PROPERTY OF THE PROPERT
                                                                                                                                     Ъ
                                                                                                                                                                                δõ
QΥ
                                               В
                                                                                     Qy
                                                                                                                                                                                                                             В
                                                                                                                                                                                                                                                                      Q
                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              J. Biol. Chem.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     between the Swiss Institute of Bioinformatics the European Bioinformatics Institute. There a use by non-profit institutions as long as institutions as long as institutions.
                                                                                                                                                                                                                                                                                                                                                                                                                                                      DISULFID
DISULFID
SISULFID
JISULFID
DISULFID
DISULFID
DISULFID
CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pfam; PF01413; C4; 2.
Pfam; PF01391; Collagen; 21.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     modified and this statement is not removed.
                                                                                                                                          1496
                                                                                                                                                                                                                                1436
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Extracellular matrix; Connective tissue;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 InterPro; IPR001442;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      InterPro; IPR000087; -.
                                                  1554
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Repeat;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SITE
                                                                                            121
    181
                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                             Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELLY STRUCTURE
WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN NETWORK.
SUBCELLULAR LOCATION: CELL SURFACE (POTENTIAL).
DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS
DOMAIN (NC1) AT THEIR C-TERMINUS, FREQUENT INTERRUPTIONS OF THE
G-X-Y REPEATS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH
CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL
TRIPLE-HELICAL 75 DOMAIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Biol. Chem. 269:7520-7526(1994).
FUNCTION: TYPE IV COLLAGEN IS THE MAJOR STRUCTURAL COMPONENT GLOMERULAR BASEMENT MEMBERANES (GBM), FORMING A 'CHICKEN-WIRE' MESHWORK TOGETHER WITH LAMININS, PROTEOGLYCANS AND ENTACTIN/
                                                                                                                                                                                                                                                                             ب
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SUBUNIT: THERE ARE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SIMILARITY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TIND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PTM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SWISS-PROT entry is copyright. It is produced through
                                                                                                                                                                                                                             GQQGPFGMPGMPGQSMRVGYTLVKHSQSEQVPPCPIGMSQLWVGYSLLFVEGQEKAHNQD 1495
                                                                                                                                                                                                                                                                        GLKGKRGDSGSPATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQD
    EFRASPFLECHG-RGTCNYYSNSYSFWLASLNPERMFRK-PIPSTVKAGELEKIISRCQV 238
                                                                                        RCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLE 180
                                                                                                                                          LGFAGSCLPRFSTMPFIYCNINEVCHYARRNDKSYWLSTTA--PIPMMPVSQTQIPQYIS
                                                                                                                                                                  LGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYIS 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 D21337; BAA04809.1;
                                               RCSVCEAPSQAIAVHSQDITIPQCPLGWRSLWIGYSFLMHTAAGAEGGGQSLVSPGSCLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COLLAGENS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PROLINES AT THE THIRD POSITION OF THE TRIPEPTIDE REPEATING I (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS. TYPE IV COLLAGENS CONTAIN NUMEROUS CYSTEINE RESIDUES WHICH INVOLVED IN INTER- AND INTRAMOLECULAR DISULFIDE BONDING. 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Hydroxylation;
                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LOCATED IN THE NC1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1451
514
559
985
1469
1502
1514
1577
1514
1611
                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TO OTHER TYPE IV COLLAGENS
                                                                                                                                                                                                                                                                                                                                                                                                                                        AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1450
1678
516
561
561
987
1558
1555
1574
1671
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1678
                                                                                                                                                                                                                                                                                                                                           55.1%;
54.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                        162461
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SIX TYPE IV COLLAGEN ISOFORMS, ALPHA 1(IV)-
OF WHICH CAN FORM A TRIPLE HELIX STRUCTURE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Glycoprotein;
                                                                                                                                                                                                                                                                                                                                                                                                                                        N-LINKED
MW; 65E4E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CELL ATT
CELL ATT
CELL ATT
OR 1555
OR 1558
BY SIMIL
OR 1671
OR 1674
BY SIMIL
                                                                                                                                                                                                                                                                                                                        Score 739; DB 1;
Pred. No. 7.9e-62;
2; Mismatches 64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NONHELICAL REGION (NC1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DOMAIN, ARE CONSERVED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TRIPLE-HELICAL REGION
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1671 (BY SIMILARITY).
1674 (BY SIMILARITY).
SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                        65E4EA282D3D37BD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ATTACHMENT SITE (POTENTIAL).
ATTACHMENT SITE (POTENTIAL).
ATTACHMENT SITE (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (BY SIMILARITY). (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Cell adhesion;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ALPHA 6(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                (GLCNAC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         There are no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Basement membrane;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 as its content
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            and the
                                                                                                                                                                                                                                                                                                                                                                   Length 1678;
                                                                                                                                                                                                                                                                                                                                                                                                                                          .) (POTENTIAL)
D CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CHAIN
                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              уд
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FIDE BONDING. 12 OF
IN ALL KNOWN TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Collagen;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 for
                                                                                                                                                                                                                                                                                                                             4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Signal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               THE
                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   commercia.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QF.
                                                      1613
                                                                                                                                                                                                                                                                                  60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MAY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            on
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      way
                                                                                                                                                                                                                                                                                                                               ω
```

```
RESULT 13
CA44_BOVIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1674 CMK 1676
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1614 DFRATPFIECSGARGTCHYFANKYSFWLTTVEERQOFGELPVSETLKAGQLHTRVSRCOV 1673
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-OCT-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   cDNAs encoding bovine alpha
collagens.":
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Bovidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Eukaryota; Metazoa; Chordata; Crania
Mammalia; Eutheria; Cetartiodactyla;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Bos taurus (Bovine).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COL4A4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COLLAGEN ALPHA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-NOV-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             01-NOV-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           029442;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CA44_BOVIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              collagens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mariyama M., Kalluri R., Hudson B.G., "The alpha 4(IV) chain of basement men
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE-92112769;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A., AND SEQUENCE OF 317-328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          NCBI_TaxID=9913;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE=87222419; PubMed=2438283;
Butkowski R.J., Langeveld J.P.M., Wieslander J., Hamilton
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gunwar S., Saus J.,
                                                                                                                                                                                                                                                                           -i- SUBCELLULAR LOCATION: CELL SURFACE (POTENTIAL).
-i- TISSUE SPECIFICITY: ALPHA 3 AND ALPHA 4 TYPE IV COLLAGENS ARE COLOCALIZED AND PRESENT ONLY IN BASEMENT MEMBRANES OF KIDNEY,
                                                                                                                                                                                                                                                                                                                                              -i- SUBUNIT: THERE ARE SIX TYPE IV COLLAGEN ISOFORMS, ALPHA 1(IV ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELIX STRUCTURE
                                                                                                                                                                                                                                                                                                                                                                                                                                                              membrane collagen."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "Localization of the Goodpasture epitope
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Hudson
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Butkowski R.J., Langeveld
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE OF 217-233.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "Glomerular basement membrane. Identification of alpha 4, of type IV collagen."; J. Biol. Chem. 265:5466-5469(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE=90202779; PubMed=2318822;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE OF 217-246
            This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation
                                                                                                                                                                                                                                                 +
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Biol.
                                                                                                  COCHLEA, LUNG AND BRAIN.

COCHLEA, LUNG AND BRAIN.

COCHLEA, LUNG AND BRAIN.

DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS DOMAIN (NC1) AT THEIR C-TERMINUS, FREQUENT INTERRUPTIONS OF THE DOMAIN (NTICH METERMINAL TRIPLE-HELICAL DOMAIN (WHICH METERMINAL TRIPLE-HELICAL TO SOMAIN.)

TRIPLE-HELICAL 75 DOMAIN.

TRIPLE-HELICAL 75 DOMAIN.

ONTE: PROLINES AT THE THIRD POSITION OF THE TRIPEPTIDE REPEATING UNIT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS.

ONTE: TYPE IV COLLAGENS CONTAIN NUMBEROUS CYSTEINE RESIDUES WHICH ARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULFILE BONDING. 12

ARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULFILE BENDING.
                                                                                                                                                                                                                                                                                                                                                                                             EUNCTION: TYPE IV COLLAGEN IS THE MAJOR STRUCTURAL COMPONENT GLOMERULAR BASEMENT MEMBRANES (GBM), FORMING A 'CHICKEN-WIRE' MESHWORK TOGETHER WITH LAMININS, PROTEOGLYCANS AND ENTACTIN/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CMK
                                                                                                                                                                                                                                                                                                                               ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELLX STRUCTURE IN COLLAGEN NETWORK WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN NETWORK
                                                                                                THESE, LOCATED IN THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 B.G.;
                                                                                  COLLAGENS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Bovinae; Bos.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Chem. 267:1253-1258(1992)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Rel. 35, Creato
Rel. 35, Last of
Rel. 40, Last of
A 4(IV) CHAIN
Swiss Institute
Bioinformatics
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                    262:7874-7877(1987)
                                                                 TO OTHER TYPE IV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PubMed=1370461;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Chordata; Craniata; Vertebrata; Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Noelken M.E., Hudson B.G.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (FRAGMENT)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              annotation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 4(IV) and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRT;
                                                                   COLLAGENS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  membrane
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ruminantia; Pecora; Bovoidea;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 453
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Reeders S.T.;
mbrane collagen.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   comparison with
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ø
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     novel chain of basement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    a fourth chain,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Isolation of other type IV
                                                                                                                                                                                                                                                                                                                                                                     ALPHA 1(IV)-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ٦.
                                                                                                       12 OF
                                                                                                                                                                                                                                                                                       EYE,
                                                                                                                                                                                                                     MAY
```

Institute.

There are no

restrictions on

modified

and this statement

institutions as long as its content atement is not removed. Usage by an

Usage

and

commercial

'n

ö Way

non-profit

```
Š
                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                            Ş
                                                                                                                                                                                                                                                                                                                                                                                                                      Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                          RESULT 14
CA44_RABIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
SEQUENCE FROM N.G.

TISSUE=Corneal endothelium;
TISSUE=Corneal endothelium;
MEDLINE=39054733; PubMed=1429714;
Kamagata Y., Mattel M.-G., Ninomiya Y.;
Kamagata Y., Mattel M.-G., Ninomiya and genomic DNAs encoding the
"Isolation and sequencing of cDNAs and genomic DNAs encoding the
alpha 4 chain of basement membrane collagen type IV and assignment o
the gene to the distal long arm of human chromosome 2.";
J. Biol. Chem. 267:23753-23758(1992).
J. Biol. The Major STRUCTURAL COMPONENT OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DISULFID DISULFID DISULFID
                                                                                                                                                                                                 01-NOV-1997 (Rel. 35, Created)
01-NOV-1997 (Rel. 35, Last seq
30-MAY-2000 (Rel. 39, Last ann
COLLAGEN ALPHA 4(IV) CHAIN (FR
                                                                                                                                                   Eukaryota; Metazoa; Mammalia; Eutheria;
                                                                                                                                                                             Oryctolagus
                                                                                                                                                                                         COL4A4
                                                                                                                                                                                                                                                               CA44_RABIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Extracellular matrix; Connective Glycoprotein; Basement membrane;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EMBL; M77480; AAA30458.2; InterPro; IPR000087; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              InterPro; IPR001442;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              or send
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           entities
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Piam;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CONFLICT
                                                                                                                                                                                                                                                                                                                         431 DTLKESHAQRQKISRCQVCVK 451
                                                                                                                                                                                                                                                                                                                                                                        371
                                                                                                                                                                                                                                                                                                                                                                                                                        311
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      253
                                                                                                                                                                                                                                                                                                                                                                                                164
                                                                                                                                                                                                                                                                                                                                                                                                                                              104
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    193 GHKGDMGEAGCPGAPGPPGPMGDPGPIGFGPGYLSGFLLVLHSQTDGEPTCPMGMPRLWT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             44
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 GLKGKRGDSGSPAT------------WTTRGFVFTRHSQTTAIPSCPEGTVPLYS
                                                                                                                                                                                                                                                                                                                                      STVKAGELEK-IISRCQVCMK
                                                                                                                                                                                                                                                                                                                                                                                   PLPMTPLSEDEIRPYISRCAVCEAPAQAVAVHSQDQSIPPCPRAWRSLWIGYSFLMHTGA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GFSFLFVQGNQRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALM 103
                                                                                                                                                                                                                                                                                                                                                                      GDQGGGQALMSPGSCLEDFRAAPFLECQGRQGTCHFFANKYSFWLTTVRPDLQFSSAPLP
                                                                                                                                                                                                                                                                                                                                                                                                                                            PMNMAPITGRALEPYISRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GYSLLYLEGQERAHNQDLGLAGSCLPIFSTLPFAYCNIHQVCHYARRNDRSYWLASTA--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    130;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PF01413; C4; 2.
PF01391; Collagen;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             s requires a license agreement (See http://www.isb-sib.ch/announce/
an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     <1
223
243
276
288
288
351
385
397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               AA;
                                                                                                                                                                                                                                                               STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1
2222
453
332
329
449
449
404
                                                                                                                                                   Lagomorpha;
                                                                                                                                                            us (Rabbit).
Chordata; Craniata; Vertebrata; Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               46384
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               52.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ¥Σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ALT_SEQ
                                                                                                                                                                                                  sequence update)
annotation update)
(FRAGMENT).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    42;
                                                                                                                                                                                                                                                                                                                                              241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TRIPLE-HELICAL REGION.
NONHELICAL REGION (NC1).
OR 329 (BY SIMILARITY).
OR 332 (BY SIMILARITY).
BY SIMILARITY).
OR 446 (BY SIMILARITY).
OR 449 (BY SIMILARITY).
BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Score 709; DB 1; Pred. No. 1.3e-59;
                                                                                                                                                                                                                                                               PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -> P (IN REF. 2 AND 3).
F7ED410AE9A65BC1 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                   Leporidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Collagen;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         tissue; Repeat; Hydroxylation;
                                                                                                                                                                                                                                                              623
                                                                                                                                                                                                                                                              Å
                                                                                                                                                   Oryctolagus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Cell adhesion
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    67;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 453;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              is
for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                            163
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    252
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            43
                                                     of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5
```

```
δÃ
                                                            Вb
                                                                                       δÃ
                                                                                                                     В
                                                                                                                                                  δÃ
                                                                                                                                                                                   В
                                                                                                                                                                                                            δ
                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                         QΥ
                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local
                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                DOMAIN
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Glycoprotein;
NON_TER
DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      the European Bioinformatics Institute. They use by non-profit institutions as long a modified and this statement is not removed. entitles requires a license agreement (See ) or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pfam; PF01391; Collagen;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pfam; PF01413; C4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EMBL; L01477; -; NOT_ANNOTATED_CDS.
InterPro; IPR000087; -.
InterPro; IPR001442; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  This SWISS-PROT entry is copyright. It is produced through between the Swiss Institute of Bioinformatics and the EN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ÷÷
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Extracellular matrix;
601
                              222
                                                          541
                                                                                        164
                                                                                                                       481
                                                                                                                                                   104
                                                                                                                                                                                   423
                                                                                                                                                                                                                                              363
                                                                                                                                                                                                                44
                                                                                                                                                                                                                                                                          1 GLKGKRGDSGSPAT----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DOMAIN (NCI) AT THEIR C-TERMINUS, FREQUENT INTERRUPTIONS OF THE G-X-Y REPEATS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH MAY CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL TRIPLE-HELICAL 7S DOMAIN.

PTM: PROLINES AT THE THIRD POSITION OF THE TRIPEPTIDE REPEATING UNIT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS.

PTM: TYPE IV COLLAGENS CONTAIN NUMEROUS CYSTEINE RESIDUES WHICH ARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULFIDE BONDING. 12 OF THESE, LOCATED IN THE NC1 DOMAIN, ARE CONSERVED IN ALL KNOWN TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SUBUNIT: THERE ARE SIX TYPE IV COLLAGEN ISOFORMS, ALPHA 1(IV)-
ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELIX STRUCTURE
WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN NETWORK.
SUBCELLULAR LOCATION: CELL SURFACE (POTENTIAL).
DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SIMILARITY: TO OTHER TYPE IV COLLAGENS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             GLOMERULAR BASEMENT MEMBRANES (GBM), FORMING A 'CHICKEN-WIRE' MESHWORK TOGETHER WITH LAMININS, PROTEOGLYCANS AND ENTACTIN/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NIDOGEN.
DTLKESQAQRQKISRCQVCVK
                                                                            GSEGTGQALASPGSCLEEFRASPFLECHGR-GTCNYYSNSYSFWLASLNPE-RMFRKPIP
                                                                                                                                      PMNMAPITGRALEPYISRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSA
                                                                                                                                                                                GYSLLYLEGOEKAHNODLGLAGSCLPIFSTLPFAYCNIHQVCHYAQRNDKSYWLASAG--
                                                                                                                                                                                                              GESELEVQGNQRAHGQDLGTLGSCLQRETTMPELECNVNDVCNFASRNDYSYWLSTPALM
                                                                                                                                                                                                                                            GHKGDTGEAGRPGAPGPPGPTGDPGPKGLGPGYLSGFLLVLHSQTDQEPACPMGMPRLWT
                          STVKAGELEK-IISRCQVCMK
                                                            GDQGGGQALMSPGSCLEDFRAAPFLECQGRQGTCHFFANEYSFWLTTVPPDLQVFSAPSP
                                                                                                                     PLPMMPLSEEEIRPYISRCAVCEAPAQAVAVHSQDQSIPPCPRAWRSLWIGYSFLMHTGA
                                                                                                                                                                                                                                                                                                        128;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COLLAGENS
                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                              <1
393
413
446
458
521
555
567
623
                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Basement
                                                                                                                                                                                                                                                                                                                                                                              392
623
502
499
464
619
616
574
62393
                                                                                                                                                                                                                                                                                                                     52.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Connective
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     membrane;
                                                                                                                                                                                                                                                                         ------WTTRGFVFTRHSQTTAIPSCPEGTVPLYS 43
                                                                                                                                                                                                                                                                                                                                                                                 ¥.
                                                                                                                                                                                                                                                                                                       45;
621
                                                                                                                                                                                                                                                                                                                                                                                             TRIPLE-HELICAL REGION.
NONHELICAL REGION (NC1).
OR 499 (BY SIMILARITY).
OR 502 (BY SIMILARITY).
BY SIMILARITY).
OR 616 (BY SIMILARITY).
OR 619 (BY SIMILARITY).
BY SIMILARITY.
                                                                                                                                                                                                                                                                                                                     Score 702; DB 1;
Pred. No. 8.2e-59
                                                                                                                                                                                                                                                                                                       Mismatches
                                                                                                                                                                                                                                                                                                                                                                                CCBC9BB31242FE82 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    tissue; Repeat; Hydroxylation; Collagen; Cell adhesion.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      There are no restrictions ong as its content is in
                                                                                                                                                                                                                                                                                                       66;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Usage
                                                                                                                                                                                                                                                                                                                                  Length 623;
                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         bу
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EMBL outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a collaboration
MBL outstation -
                                                                                                                                                                                                                                                                                                       22;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         tor
                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         commercia.
                                                                                                                                                   163
                                                                                                                                                                                                                                            422
                                                          600
                                                                                                                     540
                                                                                                                                                                                 480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ŋ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      way
```

ŝ

RESULT

```
(IV)
J. B
[2]
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                _HUMAN
                           BOYE E., Mollet G., Forestier L., Cohen-Solal L., Heidet L.,
Cochat P., Gruenfeld J.-P., Palcoux J.-B., Gubler M.-C., Antignac
Cochat P., Gruenfeld J.-P., Palcoux J.-B., Gubler M.-C., Antignac
"Determination of the genomic structure of the COL4A4 gene and of
novel mutations causing autosomal recessive Alport syndrome.";
Am. J. Hum. Genet. 63:1329-1340(1998).
-1- FUNCTION: TYPE IV COLLAGEN IS THE MAJOR STRUCTURAL COMPONENT COLOMERUIAR BASEMENT MEMBRANES (GBM), FORMING A 'CHICKEN-WIRE',
MESHWORK TOGETHER WITH LAMININS, PROTEOGLYCANS AND ENTACTIN/
                                                                                                                                                                                                                                                                                                                                                                                                                                                           "The
                                                                                                                                                                                                      Brunner H.G., van Oost B.A.
"Benign familial hematuria
alpha4 gene.";
                                                                                                                                                                                                                                   VARIANT BFH GLU-897.
MEDLINE=96379660; PubMed=8787
Lemmink H.H., Nillesen W.N.,
Brunner H.G., van Oost B.A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          [4]
REVIEW ON VARIANTS.
PubMed=9195222;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE OF 1407-1507 FROM N.A. MEDILINE=93054733; PubMed=1429714; MEDILINE=93054733; PubMed=1429714; Kamagata Y., Mattei M.-G., Ninomiya Y.; Kamagata Y., Mattei M.-G., Ninomiya Y.; Isolation and sequencing of cDNAs and genomic DNAs encoding the alpha 4 chain of basement membrane collagen type IV and assignment the gene to the distal long arm of human chromosome 2."; J. Biol. Chem. 267:23753-23758(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "cDNA isolation and partial gene structure of the human alpha 4(IV) collagen chain.";
FEBS Lett. 330:122-128(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sugimoto M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TISSUE=Eye
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE OF 1219-1690 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                chain.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE-95014445;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TISSUE=Kidney
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Eukaryota; Metazoa; Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Homo sapiens (Human)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COLLAGEN ALPHA 4(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           01-OCT-1996
01-OCT-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        01-OCT-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    P53420;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CA44_HUMAN
                                                                                                                                               MEDLINE=99011253; PubMed=9792860;
                                                                                                                                                                                                                                                                                                                                                                    Mochizuki T., Lemmink H.H., Mariyama M., Pirson Y., Verellen-Dumoulin C., Chan B.,
                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE=95078927;
                                                                                                                                                                                                                                                                                                                                                                                                                                                           Lemmink H.H.,
"The clinical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE=93374047;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Leinonen A., Mariyama M., Mochizuki T., Tryggvason K., Reeders S.T "Complete primary structure of the human type IV collagen alpha 4(chain. Comparison with structure and expression of the other alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                                              Sollagen genes in autosomal recessive Alport syndrome Nat. Genet. 8:77-82(1994).
                                                                                                                                                                                                                                                                                                                                                      neets H.J., Reeders S.T.;
                                                                                                                                                                                                                                                                                                                                                                                                                   /ARIANT AS
                                                                                                                                                                                                                                                                                                                                        Identification of mutations in the alpha 3(IV) and alpha 4(IV)
                                                                                                                                                                                           Clin.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Biol. Chem.
NIDOGEN.
SUBUNIT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 n. Comparison chains.";
                                                                                                                                                                                                                                                                                                                                                                                                                                               Mutat.
                                                                                                                                                                AS,
                                                                                                                                                                                          Invest. 98:1114-1118(1996)
                                                                                                                                                                                                                                                                                                                                                                                                                SER-1201.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (Rel. 34,
(Rel. 34,
(Rel. 40,
                                                                                                                                                                                                                                                                                                                                                                                                                                             ., Schroeder C.H., Monnens L.A.H., Smeets H.J.M.;
al spectrum of type IV collagen mutations.";
9:477-499(1997).
                                                                                                                                                           AND VARIANTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Oohashi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   269:26172-26177(1994).
                                                                                                                                                                                                                                                                                                                                                                                                  PubMed=7987396;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PubMed=7523402;
                                                                                                                                                                                                                                                                  PubMed=8787673;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PubMed=8365481;
shi T., Yoshioka
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Primates;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Chordata;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           , Last sequence update)
, Last annotation update)
CHAIN PRECURSOR.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Created)
   XIS
                                                                                                                                                                                                                       ... Monnens L.A.H., Smeets H.J.M.;
due to mutation of the type IV collagen
    TYPE
                                                                                                                                                                                                                                                    Mochizuki
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Craniata; Vertebrata;
Catarrhini; Hominidae
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRT;
   ٧I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           H., Matsuo N., Ninomiya
    COLLAGEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1690 AA
                                                                                                                                                                                                                                                    .
.
                                                                                                                                                                                                                                                                                                                                                                     Antignac C
, Schroeder
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Hominidae;
                                                                                                                                                                                                                                                    Schroeder C.H.
                                                                                                                                                                                                                                                                                                                                                                  3 C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                   Gubler M.-C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             assignment of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                4(IV)
                                                             HOF
                                                                                                                    C:;
    -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 !
1 !
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 <del>;</del>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -
```

```
SUBCELLULAR LOCATION: CELL SURFACE (POTENTIAL).
TISSUE SPECIFICITY: ALPHA 3 AND ALPHA 4 TYPE IV COLOCALIZED AND PRESENT ONLY IN BASEMENT MEMBRANES
                                                                                             ALPHA 6(IV). EACH OF WHICH CAN FORM A TRIPLE HELIX STRUCTURE WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN NETWORK.
      COLLAGENS
NES OF KIDI
      KIDNEY,
      EYE,
```

COCHLEA, LUNG AND BRAIN.

COCHLEA, LUNG AND BRAIN.

DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS DOMAIN: ALPHA CHAINS OF THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH G-X-Y REPEATS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL TRIPLE-HELICAL 7S DOMAIN. THE MAY

UNIT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS. PTM: TYPE IV COLLAGENS CONTAIN NUMEROUS CYSTEINE RESIDUES F PTM: PROLINES AT THE THIRD POSITION OF THE TRIPEPTIDE REPEATING WHICH NG. 12

ARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULFIDE BONDING. 12 OF THESE, LOCATED IN THE NC1 DOMAIN, ARE CONSERVED IN ALL KNOWN TYPE

OF

GLOMERULONEPHROPATHY CHARACTERIZED BY PROCRESSIVE REMAL FAILURE, HEMATURIA AND DEAFNESS. THE RECESSIVE FORM OCCURS EQUALLY BETWEE AND FEMALES. IV COLLAGENS.

DISEASE: DEFECTS IN COL4A4 ARE ASSOCIATED WITH THE TYPE BETWEEN

DISEASE: DEFECTS IN COL4A4 ARE ASSOCIATED WITH FAMILIAL BENIGN HEMATURIA (FBH) OR THIN BASEMENT MEMBRANE DISEASE. FBH IS CHARACTERIZED BY PERSISTENT HEMATURIA, AN ELECTRON MICROSCOPICALLY DETECTABLE THIN GLOMERULAR BASEMENT MEMBRANE (GBM) AND AN AUTOSCOMAL DOMINANT MODE OF INHERITANCE. RENAL FUNCTION REMAINS NORMAL. IN CHILDREN DIFFERENTIATION BETWEEN FBH AND AS CAN BE DIFFICULT, BECAUSE BOTH DISORDERS ARE MANIFESTED BY PERSISTENT HEMATURIA AND THIN GBM AT THAT AGE.

SIMILARITY: TO OTHER TYPE IV COLLAGENS.

use by non-profit institutions as long as its content is modified and this statement is not removed. Usage by and foentities requires a license agreement (See http://www.isb-sib.or.send an email to license@isb-sib.ch). This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation between Bioinformatics Institute. There are no restrictions on its ere are no rest as its content for .ch/announce/ 'n in no way

CHAIN
DOMAIN
DOMAIN
DOMAIN
SITE
SITE
SITE
SITE EMBL; X81053; EMBL; D17391; MIM; 120131; -SITE
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID MIM; SITE SITE SITE SIGNAL $\begin{tabular}{ll} Hydroxylation; Collagen; Glycoprotein; Signal; Disease mutation; \\ Polymorphism. \end{tabular}$ Extracellular matrix; Connective tissue; Basement membrane; Repeat; Pfam; Ptam; InterPro; IPR000087; -. InterPro; IPR001442; -. 203780; PF01413; C4; 2. PF01391; Collagen; 20. 1460 1212 1480 1513 1525 1528 1588 1622 CAA56943.1; BAA04214.1; 1690 64 1459 1690 96 147 191 312 726 787 991 1214 1569 1566 1531 1686 1683 1683 CELL ATTACHMENT SITE (POTEN
CLEAVAGE (BY COLLAGENASE)
(BY SIMILARITY).
CELL ATTACHMENT SITE (POTEN
CLEAVAGE (BY COLLAGENASE) NONHELICAL REGION (NC1).
CELL ATTACHMENT SITE (POT
CELL ATTACHMENT SIT OR OR OR TRIPLE-HELICAL REGION COLLAGEN ALPHA 4(IV) CHAIN POTENTIAL. 7S DOMAIN R 1683 (BY S1 R 1686 (BY S1 7 SIMILARITY. SIMILARITY 1569 (BY SIMILARITY)
(BY SIMILARITY) (BY SIMILARITY). (BY SIMILARITY). SITE (POTENTIAL) (POTENTIAL).
(POTENTIAL). (POTENTIAL).
(POTENTIAL).
(POTENTIAL).
(POTENTIAL).

```
В
                                                                             ş
                                                                                             DЬ
                                                                                                           QΥ
                                                                                                                            망
                               Вb
                                              ş
                                                                                                                                                                                                                                          Query Match 51.9%; Score 696; DB 1; Length 1690; Best Local Similarity 49.0%; Pred. No. 9.2e-58; Matches 128; Conservative 43; Mismatches 68; Indels 22; Gaps
                                                                                                                                                                                                                                                                                                                                                                   CARBOHYD
CARBOHYD
VARIANT
                                                                                                                                                                                                 CONFLICT
SEQUENCE
                                1608
                                                           1430 GRKGDTGEDGYPGGPGPPGPIGDPGPKGFGPGYLGGFLLVLHSQTDQEPTCPLGMPRLWT 1489
                                                                                                                                                                                                                                        VARIANT
                                                                                                                                                                                                                                                        VARIANT
                                                                                                                                                                                                                                                                       VARIANT
                                                                                                                                                                                                                                                                                      VARIANT
                                                                                                                                                                                                                                                                                                                     VARIANT
                                                                                                                                                                                                                                                                                                                                     VARIANT
                                                                                                                                                                                                                                                                                                                                                    VARIANT
1668 DTLKESQAQRQKISRCQVCVK 1688
                                                                                                                                                                                                                                                                                                      VARIANT
                             222 STVKAGELEK-IISRCQVCMK 241
                                                                                                                                                                                                                         'ARIANT
                                                                                                                                  1 GLKGKRGDSGSP------ATWTTRGFVFTRHSQTTAIPSCPEGTVPLYS 43
                                                                                                                                                                                               1402
                                                                                                                                                                                                                                                        1201
                                                                                                                                                                                                                                                                        1030
                                                                                                                                                                                                                                                                                       1004
                                                                                                                                                                                                                                                                                                      931
                                                                                                                                                                                                                                                                                                                     897
                                                                                                                                                                                                                                                                                                                                      570
                                                                                                                                                                                                                                                                                                                                                    545
                                                                                                                                                                                                                                                                                                                                                                    142
669
441
                                                                                                                                                                                                                                        1402
                                                                                                                                                                                                                                                        1201
                                                                                                                                                                                                                                                                        1030
                                                                                                                                                                                                                                                                                      1004
                                                                                                                                                                                                                                                                                                                                                                   142
669
446
                                                                                                                                                                                                                                                                                                      931
                                                                                                                                                                                                                                                                                                                     897
                                                                                                                                                                                                                                                                                                                                                    545
                                                                                                                                                                                                                                                                                                                                     570
                                                                                                                                                                                                                                                                                                      /FTId=VAR_008150.
G -> E (IN FBH).
/FTId=VAR_001912.
A -> T.
                                                                                                                                                                                                                                        /FTId=VAR_008152.

G -> V (IN AS).

/FTId=VAR_008153.

G -> S (IN AS).

/FTId=VAR_001913.

P -> S.
                                                                                                                                                                                                                                                                                                                                                   N-LINKED (GLCNAC. . .) (POTENTIAL).
N-LINKED (GLCNAC. . .) (POTENTIAL).
MISSING (IN AS).
/FTId=VAR_008148.
G -> A.
                                                                                                                                                                                                                                                                                             /FTId=VAR_008151.
                                                                                                                                                                                                                                                                                                                                            /FTId=VAR_008149.
                                                                                                                                                          5
```

Search completed: April 13, 2001, 15:46:04 Job time: 277 sec

OLUSON WHALE TOAG SIMT

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Run
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Pred. No. is the number of results predicted by chance to score greater than or equal to the score of the result be and is derived by analysis of the total score distribution
1340
1210.5
1210.5
960
952.5
951
943.5
943.5
8872.8
8872.8
8872.8
832.7
96.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
783.5
7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:*
   Query
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Match Length DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PIR_67:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-09-543-371-10
1340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      April 13, 2001, 15:38:59; Search time 33.96 Seconds (without alignments) 493.769 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       198801 seqs, 68722935 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GenCore version 4.5 Copyright (c) 1993 - 2000 Compugen Ltd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GLKGKRGDSGSPATWTTRGF.....KAGELEKIISRCQVCMKKRH 244
   CGHU3B
148302
A39024
CGHU4B
CGHU4B
CGHS4B
CGMS4B
852917
849736
849981
85494981
85494981
8549407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
845407
8454
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ħ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            198801
```

4 5	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30
81	81	81.5	81.5	82.5	84	84.5	89.5	89.5	89.5	90.5	96.5	110.5	198	228	326
6.0	6.0	6.1	6.1	6.2	6.3	6.3	6.7	6.7	6.7	6.8	7.2	8.2	14.8	17.0	24.3
599	423	2531	539	1016	269	369	3707	573	537	2150	4391	260	52	58	79
Ν	N	N	Ŋ	N	N	N	N	N	N	N	N	N	N	N	N
B42049	A41207	T16743	A35052	T00375	D69223	G72069	S18252	S78197	S78195	T32497	A38096	T23033	S69113	B43928	C43928
leishmanolysin (EC	collagen 13, nonfi	hypothetical prote	interleukin-2 rece	hypothetical prote	anion transport sy	conserved hypothet	heparan sulfate pr	probable maturase	cytochrome-c oxida	hypothetical prote	perlecan precursor	hypothetical prote	collagen alpha 3(I	probable collagen	probable collagen

ALIGNMENTS

collagen alpha 4(I A; Molec collagen alpha 4(I A; Note: collagen alpha 4(I A; Note: collagen alpha 4(I R; Morri collagen alpha 1(I Am. J) collagen type IV a collagen alpha 3(I A; Title collagen alpha 3(I A; Refer	alpha 3(I alpha 3(I alpha 3(I alpha 3(I alpha 2(I	printed, printed, ion alpha 3(I alpha 3(I alpha 1(I alpha 1(I alpha 1(I alpha 1(I alpha 1(I alpha 1(I alpha 1(I) alpha 1(I) alpha 1(I) alpha 1(I)	RESULT CGHU3B CO11aga co11aga N;Altern C;Specie C;Access R;Mariyal J;Biol. A;Tefere
A;Molecule type: mRNA A;Molecule type: mRNA A;Residues: 1427-1444 <ber> A;Residues: 1427-1444 <ber> A;Rote: sequence extracted from NCBI backbone (NCBIP:133363); sequence incorrectly id A;Notrison, K.E.; Mariyama, M.; Yang-Feng, T.L.; Reeders, S.T. Am. J. Hum. Genet. 49, 545-554, 1991 A;Title: Sequence and localization of a partial cDNA encoding the human alpha3 chain A;Reference number: A39786; MUID:91353570</ber></ber>	A; Residues: 1386-1670 <quina; (ncbip:115597)="" 12090-12094,="" 1386-1670="" 17358,="" 1993="" 1994="" 268,="" 269,="" <quina;="" a44043="" a44738;="" a45971="" a;="" acid="" alternatively="" annotation;="" antigen="" backbone="" bernal,="" biol.="" chem.="" contents:="" correction="" cross-references:="" d.;="" elena,="" encoding="" erratum;="" extracted="" from="" garcia-sogo,="" gb:m92993;="" goodpasture="" human="" in="" intronic="" is="" j.="" m.;="" minner="" mrna="" muid:93280184="" muid:94274734="" ncbi="" nid:g177895;="" not="" note:="" nucleic="" number:="" pid:g177896="" pidn:aaa21610.1;="" quinones,="" r;="" reference="" residues:="" s.;="" s.f.;="" saus,="" sequence="" shown<="" spliced.="" steatus:="" td="" the="" title:="" to=""><td>ion: A54763 le type: mRI es: 1-1670 references: mental sour , N.; Mason Invest. 89 Molecular ince number: le type: mRI es: 1331-15: references: references: references: ses: 1331-15: references: ses: 1331-15: references: ses: 1331-15: references: chem. 267, Exon/intro nce number:</td><td>RESULT 1 CGHU3B CGHU3B COllagen alpha 3(IV) chain precursor, long splice form - human collagen alpha 3(IV) chain precursor, long splice form - human N;Alternate names: Goodpasture antigen; procollagen alpha 3(IV) chain long splice for C;Species: Homo sapiens (man) C;Date: 28-Oct-1994 *sequence_revision 03-Oct-1995 *text_change 22-Jun-1999 C;Date: 28-Oct-1994 *sequence_revision 03-Oct-1995 *text_change 22-Jun-1999 C;Accession: A54763: A43928: A44043: A45971; A39786 R;Marilyama, M.; Leinonen, A.; Mochizuki, T.; Tryggvason, K.; Reeders, S.T. J. Biol. Chem. 269, 23013-23017, 1994 A;Title: Complete primary structure of the human alpha3(IV) collagen chain. Coexpress A;Reference number: A54763; MUID: 94364994</td></quina;>	ion: A54763 le type: mRI es: 1-1670 references: mental sour , N.; Mason Invest. 89 Molecular ince number: le type: mRI es: 1331-15: references: references: references: ses: 1331-15: references: ses: 1331-15: references: ses: 1331-15: references: chem. 267, Exon/intro nce number:	RESULT 1 CGHU3B CGHU3B COllagen alpha 3(IV) chain precursor, long splice form - human collagen alpha 3(IV) chain precursor, long splice form - human N;Alternate names: Goodpasture antigen; procollagen alpha 3(IV) chain long splice for C;Species: Homo sapiens (man) C;Date: 28-Oct-1994 *sequence_revision 03-Oct-1995 *text_change 22-Jun-1999 C;Date: 28-Oct-1994 *sequence_revision 03-Oct-1995 *text_change 22-Jun-1999 C;Accession: A54763: A43928: A44043: A45971; A39786 R;Marilyama, M.; Leinonen, A.; Mochizuki, T.; Tryggvason, K.; Reeders, S.T. J. Biol. Chem. 269, 23013-23017, 1994 A;Title: Complete primary structure of the human alpha3(IV) collagen chain. Coexpress A;Reference number: A54763; MUID: 94364994

```
A;Description: minor structural component of extracellular basement membrane in kidney g C;Superfamily: collagen alpha 1(IV) chain
C;Superfamily: collagen alpha 1(IV) chain
C;Superfamily: collagen alpha 1(IV) chain
Pyords: alternative splicing; basement membrane; cell binding; coiled coil; extracel
Pyords: alternative splicing; basement membrane; cell binding; coiled coil; extracel
Pyords: alternative splicing; basement collagen alpha 3(IV) chain, long splice form #status predicted <MAT>
F;29-42/Domain: amino-terminal nonhelical, NH1 <NH1>
F;29-42/Domain: cell attachment (R-G-D) motif
F;1996-998/Region: cell attachment (R-G-D) motif
F;1306-1308/Region: cell attachment (R-G-D) motif
F;1345-1347/Region: cell attachment (R-G-D) motif
F;1432-1434/Region: cell attachment (R-G-D) motif
F;143
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Introns: 1385/1; 141871; 1488/1; 1547/2; 1585/3; 1643/2 *status incomplete A;Introns: 1385/1; 141871; 1488/1; 1547/2; 1585/3; 1643/2 *status incomplete A;Note: the alpha 3(IV) and alpha 4(IV) chain genes are encoded on opposite strands with C;Complex: This minor type IV collagen is thought to form a heterotrimer of two alpha 3(mong trimer aminor-terminal domains (with disulfide and desmosine cross-links), dimeric a erassociations in the interrupted helical domain (with disulfide and desmosine cross-li
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Cross-references: GB:S55790; NID:g234418; PIDN:AAB19637.1; C;Comment: Prolines and lysines at the third position of the ed and subsequently O-glycosylated. C;Comment: In Goodpasture's syndrome, an autoimmune response
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Accession: A39786
A; Molecule type: mRNA
A; Residues: 1453-1593, 'A', 1595-1670 < MOR>
collagen alpha 3(IV) chain - mouse (fragment) C;Species: Mus musculus (house mouse) C;Date: 15-Mar-1996 #sequence_revision 15-Mar C;Accession: I48302; S47278 R;Miner, J.H.; Sanes, J.R. J. Cell Biol. 127, 879-891, 1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ø
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Map position:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ър
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Qy
                                                                                                                                                                                                                                                                                                                                                                            B
                                                                                                                                                                                                                                                                                                                                                                                                                                          QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Дb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      γQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Cross-references: GDB:128351; OMIM:120070
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity
Matches 244; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1547
                                                                                                                                                                                                                                                                                                                                                                                                                                              241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LGTLGSCLQRETTMPELECNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYIS 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYIS
                                                                                                                                                                                                                                                                                                                                                                                                                                                      KKRH 244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RCTYCEGPAJAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLE 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2q36-2q37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       100.0%; llarity 100.0%; Conservative C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 1340; DB 1;
Pred. No. 1.5e-113;
; Mismatches 0;
                                                                                                                        15-Mar-1996
                                                                                                                    #text_change 16-Feb-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PID:g234419
tripeptide :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           develops against an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     repeating
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   epitope
```

```
A; Title: Collagen IV alpha 3, alpha 4, and alpha A; Reference number: A54979; MUID:95050957
A; Accession: I48302
A; Status: preliminary
A; Molecule type: mRNA
A; Residues: 1-246 <RES>
A; Cross-references: EMBL:Z35166; NID:9535197; PID
C; Superfamily: collagen alpha 1(IV) chain
                                                                                                                                                                                                                               A; Accession: Jove A; Accession: Jove A; Molecule type: protein
A; Molecule type: protein
A; Residues: 27-28, 'X', 230-244 <BUT>
A; Residues: 27-28, 'X', 230-244 <BUT>
A; Saus, J.; Wieslander, J.; Langeveld, J.P.P.
J. Biol. Chem. 263, 13374-13380, 1988
A; Title: Identification of the Goodpasture
A; Title: Identification of the Goodpasture
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              collagen alpha 3(IV) chain - bovine (fragment) C;Species: Bos primigenius taurus (cattle) C;Species: Bos primigenius taurus (cattle) C;Date: 04-Dec-1992 #sequence_revision 04-Dec-1992 #t C;Date: 04-Dec-1992 #sequence_revision 04-Dec-1992 #t C;Accession: A39024; S20672; S17802; A35167; C39419; C;Accession: A39024; S20672; A35167; C39419; C;Accession: K.E.; Germino, G.G.; Reeders, S.T. J. Biol. Chem. 266, 34-39, 1991 A;Title: Use of the polymerase chain reaction to clor A;Reference number: A39024; MUID:91093146
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          뫄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Q
                                                                                                                                                                                                                                                                                                                                                                                              A;Cross-references: EMBL:M63139; NID:g162886; PID:
R;Butkowski, R.J.; Langeveld, J.P.M.; Wieslander,
J. BiOl. Chem. 262, 7874-7877, 1987
A;Title: Localization of the Goodpasture epitope
                                                                                                                                                                                                                                                                                                                                                     A; Reference number: S18432; MUID: 87222419
A; Accession: S20672
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Molecule type: mRNA
A; Residues: 1-471 < MOR>
                                                                                    J. Biol. Chem. 265, 5466-5469, 1990
A;Title: Glomerular basement membrane. Identification
A;Reference number: A35167; MUID:90202779
A;Accession: A35167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Accession: A39024
            A; Molecule type: protein
A; Residues: 236-258 <GUN>
R; Gunwar, S.; Ballester, F.; Kalluri, R.; Timoneda, J.; Chonko,
J. Biol. Chem. 266, 15318-15324, 1991
                                                                                                                                                                A; Molecule type: protein
A; Residues: 227-228, 'X', 230-252, 'Y', 254
R; Gunwar, S.; Saus, J.; Noelken, M.E.; I
                                                                                                                                                                                                                     A; Reference number: S17802; A; Accession: S17802
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GLKGKRGDSGSPATWT-TRGEVETRHSQTTAIPSCPEGTVPLYSGESFLEVQGNQRAHGQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MKKRH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MKKRH 244
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      221;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          90.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 1218.5; DB 
Pred. No. 2e-103; 
2; Mismatches 1
                                                                                                                                                                                                                                                                                                     J.P.M.; Quinones, S.; Hudson,
                                                                                                                                                                    Hudson,
Identification
                                                                                                                                                                                                                                                                                                                                                                                                  epitope to
                                                                                                                                                                                                                                                                 antigen as
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PID:g535198
                                                                                                                                                                                                                                                                                                                                                                                                                                      PIDN:AAA62708.1; der, J.; Hamilton,
                                                                                                                                                                    B.G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           5 chains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             clone and sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 #text_change 13-Aug-1999
9; S13747; S20815
                                                                                                                                                                                                                                                                                                                                                                                                    מ
                                                                                                                                                                                                                                                                   the
                                                                                                                                                                                                                                                                                                                                                                                                      novel chain
                                                                                                                                  of
of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
  dimeric
                                                                                                                                  a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         in rodent basal
                                                                                                                                  fourth chain,
                                                                                                                                                                                                                                                                                                                                                                                                                                          PID:g162887
, J.; Hudson
                                      A.M.; Edwards,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1;
                                                                                                                                                                                                                                                                                                                                                                                                        of basement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             b
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           181
                                                                                                                                                                                                                                                                       of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1;
                                                                                                                                                                                                                                                                                                                                                                                                          membran
                                                                                                                                      of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           se.
```

```
A;Reference number: A39419; MUID:91332055
A;Accession: C39419.
A;Mclecule type: protein
A;Mclecule type: protein
A;Residues: 236-255 <GU2>
C;Superfamily: collagen alpha 1(IV) chain
C;Keywords: basement membrane; cell binding; coiled coil; disulfide bond; duplication;
F;1-338/Domain: collagenous (fragment) #status predicted <COL>
F;239-471/Domain: carboxyl-terminal nonhelical, NCI #status predicted <NCI>
F;339-471/Domain: repeat NCI #status predicted <NCI2>
F;334-471/Domain: repeat NCI #status predicted <NCI2>
F;332,238/Modified site: hydroxyproline (Pro) #Status experimental
F;306-312,417-423/Disulfide bonds: #status predicted
                                                                                                                                                                                                                                                                                         A; Molecule type: DNA
A; Residues: 1-1669 <SOII>
A; Cross-references: EMBL:J04217; GB:J05039; NID:g180800; PIDN:AAA53098.1; PID:g180803
A; Note: the nucleotide sequence was submitted to the EMBL Data Library, October 1988
R; SoIninen, R.; Huotari, M.; Hostikka, S.L.; Prockop, D.J.; Tryggvason, K.
J. Biol. Chem. 263, 17217-17220, 1988
A; Title: The structural genes for alphal and alpha2 chains of human type IV collagen in R; Reference number: A92690; MUID:89034231
A; Accession: A32117
                                                                                                                        A;Cross-references: EMBL:J04217; NID:g180759; PIDN:AAA53097. R;Poeschl, E.; Pollner, R.; Kuehn, K. EMBO J. 7, 2687-2695, 1988
A;Title: The genes for the alphal(IV) and alpha2(IV) chains A;Reference number: S02738; MUID:89030632
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           C;Species: Homo sapiens (man)
C;Date: 28-May-1986 #sequence_revision 31-Dec-1992 #text_change 07-Dec-1999
C;Accession: S16876; A32117; S02738; S00048; S25826; A23115; S00207; S39614;
R;Solninen, R.; Huotari, M.; Ganguly, A.; Prockop, D.J.; Tryggvason, K.
Biol. Chem. 264, 13565-13571, 1989
Biol. Chem. 264, 13565-13571, 1989
Lite: Structural organization of the gene for the alpha-1 chain of human eference number: S16876; MUID:89340433
                                                                                                                                                                                                                                                         A; Molecule type: DNA
A; Residues: 1-28 <SOI2>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          collagen alpha 1(IV) chain precursor - human N; Alternate names: procollagen alpha 1(IV) chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                        A; Status: translation not shown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CGHU4B
                :Molecule type: DNA
-Residues: 1-6,'L',8-28 <POE>
                                                                                                   Accession: S02738
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query
Best I
  Cross-references: EMBL:X12784;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Status: nucleic acid sequence not shown; translation not
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Accession: S16876
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         407
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        467
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 347
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        227
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1 GLKGKRGDSGSPATWTT-RGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYI 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MKKR 243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MKMR 470
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EEFRASPFIECHGRGTCNYYSNSYSFWLASLDPKRWFRKPIPSTVKAGELENIISRCQVC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EEFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SRCTVCEGPAIAIAVHSQTTDIPPCPAGWISLWKGFSFIMFTSAGSEGAGQALASPGSCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DLGTLGSCLQRFTTMPFLFCNINDVCNFASRNDYSYWLSTPAMIPMDMAPITGRALEPYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GLKGKPGDTGPPAAGAVMRGFVFTRHSQTTAIPSCPEGTEPLYSGFSLLFVQGNEQAHGQ 286
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              90.3%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           10;
NID:g30072
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 1210.5; DB 2
Pred. No. 2.2e-102;
0; Mismatches 12;
                                                                                                                                                                                                                                 PIDN: AAA53097.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ່ 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              shown
                                                                                                                                                      g.
                                                                                                                                                      human
                                                                                                                                                                                                                              PID:g553233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            S39614;
K.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                      basement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         466
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A02863;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1;
                                                                                                                                                      membrane
                                                                                                                                                                                                                                                                                                                                                               ar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A5
```

```
R:Babel, W.; Glanville, N.W.
Bur. J. Biochem. 143, 545-556, 1984
A;Title: Structure of human-basement-membrane (type A;Reference number: A02863; MUID:85003629
                           A;Cross-references: EMBL:M10940; NID:g180421; PIDN:AAA52006.1; PID R;Brinker, J.M.; Gudas, L.J.; Loldl, H.R.; Wann, S.Y.; Rosenbloom, Proc. Natl. Acad. Sci. U.S.A. 82, 3649-3653, 1985
A;Title: Restricted homology between human alpha-1 type IV and oth A;Reference number: S16879; MUID:85216555
                                                                                                                                                                                                                                                                                                                  J. Biol. Chem. 260, 700 A;Title: cDNA clones coding A;Title: cna clones coding A;Title: cna clones coding c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Experimental source: placenta R;Glanville, R.W.; Rauter, A. Hoppe-Seyler's Z. Physiol. Chem. 362, 943-951, 1981 Hoppe-Seyler's Z. Physiol. Chem. 362, 943-951, 1981 A;Title: Pepsin fragments of human placental basement-membrane collagens A;Reference number: S16908; MUID:82005835
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          R;Soininen, R.; Haka-Risku, T.; Prockop, D. FEBS Lett. 225, 188-194, 1987. Fructure of the A;Title: Complete primary structure of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       R;Brazel, D.; Oberbaeumer, I.; Dieringer, H.; E
Eur. J. Blochem. 168, 529-536, 1987
A;Title: Completion of the amino acid sequence
A;Reference number: $00048, MUID:88029471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Molecule type: protein
A; Residues: 534-537, 'G', 539, 'G', 541-542, 'G', 544-549; 939-940, 'M', 942-944, 'V', 946, 'X'
A; Experimental source: placenta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        R;MacWright, R.S.; Benson, V.A.; Biochemistry 22, 4940-4948, 1983
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Molecule type: protein
A;Residues: 534-537,'6',539,'G',541-542,'X',544-553;1389-1405,'XX',1408-1409,'X'
R:MacWright, R.S.; Benson, V.A.; Lovello, K.T.; van der Rest, M.; Fietzek, P.P.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Reference number: A; Accession: A58517
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Reference number: S39614;
A; Accession: S39614
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Cross-references: EMBL:Y00706; NID:g29548; R;Eble, J.A.; Golbik, R.; Mann, K.; Kuehn, K. EMBO J. 12, 4795-4802, 1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Experimental source: placenta
A; Note: the amino end of the mature form is blo
A; Note: the amino end of The mature form is blo
D; Note: the amino end of the mature form is blo
D; Note: the amino end of the mature form is blo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 R;Glanville, R.W.; Qian, R.Q.; Siebold, B.; Ris
Eur. J. Biochem. 152, 213-219, 1985
A;Title: Amino acid sequence of the N-terminal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Molecule type: protein
A; Residues: 271-318, 'A', 320-554 <BRA2>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Molecule type: mRNA
A; Residues: 1-318, 'A'
A; Accession:
                                                                                                                                                                                                                            A; Molecule type: mRNA
A; Residues: 1256-1669 <PIH>
                                                                                                                                                                                                                                                                                                                                                                                                                                                    R; Pihlajaniemi,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Reference number: A; Accession: S16910
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A; Title: Isolation and characterization of A; Reference number: S16910; MUID: 84053346
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Molecule type: protein
A;Residues: 534-718,'D',720-836,'Y',838-841,'P',843-903,'Q',905-913,'K',915-997,'K'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Molecule type: protein A; Residues: 371-554 <EBL>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Title: The alpha-1-beta-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Residues:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Molecule type: protein
A; Residues: 28-236, 'KE', 239-240, 'K', 242-243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Reference number: A23115; MUID:86004708
A; Accession: A23115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Accession:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Cross-references:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Accession:
                                                                                                                                                                                                                                                                                                       A; Accession:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Molecule type:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Accession:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Reference number: S00207;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     244-530 <SOI3>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   S00207
S16879
                                                                                                                                                                                                                                                                                                       S01466
                                                                                                                                                                                                                                                                                                                                                                                                             260, 7681-7687, 1985
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL: X05561;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ,320-944 <BRA1>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             I.; Dieringer, H.; Babel, W.; Glanville,
536, 1987
                                                                                                                                                                                                                                                                                                                                      for the Pro-alpha-1(IV) MUID:85207819
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MUID: 94038963
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   integrin recognition
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           MUID:88083584
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NID: g30066;
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Myers, J.C.; Kurkinen,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 pepsin-solubilized
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              alpha(1)-chain of human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            blocked
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       <GLA>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Risteli,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PIDN:CAA68698.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PIDN:CAA29075.1; PID:g30067
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Tryggvason,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         aggregation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              the alphal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ĮV)
                                                                                                                                                                                                                                                                                                                                                                                 chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ٦
;.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   collagen.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           the
                                                                                                                                                                                                                                                                                                                                                                                 of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         and
                                                                                                                                                                                                                                                                                                                                                                                                                                                        3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           basement membrane
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PID:g29549
                                                                          other
                                                                                                                                                                                        PID:g180424
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         cross-linking
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Lebo,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  basement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              of human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 R.W.; Deutzmann,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    basement membrane
                                                                                                                                                                                                                                                                                                                                                                                                                                                        R.;
                                                                      procollagen
                                                                                                                                                 Kefalides,
                                                                                                                                                                                                                                                                                                                                                                                 ٧
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Cheung, M.C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    showing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               amino-acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  membrane
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              basement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       collag
                                                                          chai
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    inte
```

```
F;2/-18byProduct: Collages applied L(N) Class Products
F;2/-18d 1440/Domain: amino-terminal nonhelical; 78 <7809
F;163-1440/Domain: interrupted helical <COLD
F;414-452/Region: cell attachment (R-G-D) motif
F;597-599/Region: cell attachment (R-G-D) motif
F;917-919/Region: cell attachment (R-G-D) motif
F;918-970/Region: cell attachment (R-G-D) motif
F;918-1551/Domain: collagen IV carboxyl-terminal repeat <CTD>
F;1441-1659/Domain: collagen IV carboxyl-terminal repeat <CTD>
F;1451-1651/Domain: collagen IV carboxyl-terminal repeat <CTD>
F;1451-1659/Domain: collagen IV carboxyl-terminal repeat <CTD>
F;1451-1659/Disulfide site: 4-hydroxyl-terminal repeat <CTD-
F;1461-1652/Disulfide site: 4-hydroxyl-terminal repeat <CTD-
F;1461-1652/Disulfide bonds: (cr 1570-1665, 1604-1662) #status experimental F;1201-1669, Disulfide bonds: (cr 1570-1665, 1604-1662) #status predicted
F;1570-1665, 1604-1665/Disulfide bonds: (cr 1570-1665, 1604-1662) #status predicted

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Cross-references: EMBL:M11315; NID:g180817; PIDN:AAA52042.1; PID:g180818 R;Oberbaeumer, I.; Laurent, M.; Schwarz, U.; Sakurai, Y.; Yamada, Y.; Vogeli, G.; Eur. J. Biochem. 147, 217-224, 1985 Eur. J. Biochem. 147, 217-224, 1985 A;Title: Amino acid sequence of the non-collagenous globular domain (NC1) of the A;Reference number: A02864; MUID:85127033
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Description: structural component of extracellular basement membrane C;Superfamily: collagen alpha 1(IV) chain c;Seywords: basement membrane; blocked amino end; cell binding; coiled F;1-26/Domain: signal sequence #status predicted <SIG>F;27-1669/Product: collagen alpha 1(IV) chain #status predicted <MAT>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Cross-references: GDB:119791; OMIM:120130

A;Map position: 13q34-13q34

A;Introns: 28/3; 48/3; 78/3; 93/3; 108/3; 129/3; 147/3; 156/3; 184/3; 205/3; 217/3; 231/4; 71; 731/3; 782/1; 820/1; 876/1; 906/1; 957/1; 990/1; 1020/1; 1066/3; 1109/1; 1136/1; 116

Complex: type IV collagen is a heterotrimer of two alpha 1(IV) chains and one alpha 2(thions among trimer amino-terminal domains (disulfide and desmosine cross-links), diminer associations in the interrupted helical domain (with disulfide and desmosine cr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Eur. J. Blochem. 176, 617-624, 1988
A;Title: The arrangement of intra- and intermolecular disulfide bonds
A;Reference number: S02550; MUID:89005112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Molecule type: protein
A;Residues: 1435-1461,'H',1463-1482,'X',1484-1491;1501-1514,'X',1516-1519;1534-1553,'X'
R;Siebold, B.; Deutzmann, R.; Kuehn, K.
Eur. J. Biochem. 176, 617-624, 1988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Accession: S19091
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Contents: annotation; disulfide bonds
                                             δÃ
                                                                                                               B
                                                                                                                                                                          Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gene: GDB:COL4A1
                                                                                                                                                                                                                                                                                   Query Match
Best Local
                                                                                                                                                                                                                                                       Matches
                                                                                                               61
                                                                                                                                                                          1 GLKGKRGDSGSPATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQD
                                             LGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYIS
                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                                                                                                                                   71.6%;
                                                                                                                                                                                                                                                       32;
                                                                                                                                                                                                                                                    Score 960; DB 1;
Pred. No. 4.9e-79;
2; Mismatches 41;
                                                                                                                                                                                                                                                                                                                  Length 1669;
                                                                                                                                                                                                                                                           2;
                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      in the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     coil;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      carboxyter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     duplication
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           G.;
                                                                                                                                                                                                                                                           QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Дb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                  C;Species: Mus musculus (house mouse)
C;Date: 28-May-1986 #sequence_revision 31-Dec-1992 #text_change 16-Jun-2000
C;Accession: A33525; S01454; A28066; A02864; A25636; A29301; S19079; A32003; R;Muthukumaran, G; Blumberg, B; Kurkinen, M.
J;Biol. Chem. 264, 6310-6317, 1989
A;Title: The complete primary structure for the alpha-1-chain of mouse collage. A;Reference number: A33525; MUID:89197932
A;Accession: A33525
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Вр
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
A; Accessor. A; Molecule type: mRNA
A; Molecule type: mRNA
A; Residues: 1-1669 < MUT>
A; Residues: 1-1669 < MUT>
A; Cross-references: EMBL: J04694; NID: g556296; PIDN: AAA50292.1; PID: g556297
A; Cross-references: EMBL: J04694; NID: g556296; PIDN: AAA50292.1; PID: g556297
A; Cross-references: EMBL: J04694; NID: g556296; PIDN: AAA50292.1; PID: g556297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Dр
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Вb
                                                                                                                                                                                                                                                                                                                                                                                                                              CGMS4B collagen alpha 1(IV) chain precursor -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ::
1667 RR 1668
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1607
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     \vdash
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      K
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MKR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MKK 242
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       167;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             242
```

mouse

collagen

A31766;

```
A;Accession: A;Accession: A;Accession: A;Accession: A;Status: preliminary
A;Molecule type: mRNA
A;Residues: 1-253 <RES>
A;Residues: 1-253 <RES>
A;Cross:references: EMBL:235168; NID:g535201; PIDN:CAA84531.1; PID:g535202
A;Cross:references: EMBL:235168; NID:g535201; PIDN:CAA84531.1; PID:g535202
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       collagen alpha 5(IV) chain - mouse (fragment)
c:Species: Mus musculus (house mouse)
c:Date: 15-Mar-1996 **sequence_revision 15-Mar-1996 **text_change
c:Accession: 148304; $47280
R:Miner, J.H.; Sanes, J.R.
J. Cell Biol. 127, 879-891, 1994
A;Title: Collagen IV alpha 3, alpha 4, and alpha 5 chains in rod
A;Reference number: A54979; MUID:95050957
A;Accession: 148304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EFRSAPFIECHGRGTCNYYANAYSFWLATIERSEMFKKPTPSTLKAGELRTHVSRCQVCM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVCM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LGTAGSCLRKFSTMPFLFCNINNVCNFASRNDYSYWLSTPEPMPMSMAPITGENIRPFIS
                                                                                                           SRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCL
                                                                                                                                                                            GLKGKRGDSGSPATWT-TRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQ 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RCAVCEAPAMVMAVHSQTIQIPPCPSGWSSLWIGYSFVMHTSAGAEGSGQALASPGSCLE
EEFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVC
                                                                                        SRCAVCEAPAVVIAVHSQTIQIPHCPQGWDSLWIGYSFWMHTSAGAEGSGQALASPGSCL
                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                       71.18;
68.78;
                                                                                                                                                                                                                                                                                                                                                                  32;
                                                                                                                                                                                                                                                                                                                                                                                          Score 952.5; DI
Pred. No. 3e-79;
                                                                                                                                                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                               DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 rodent basal laminae:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            13-Aug-1999
                                                                                                                                                                                                                                                                                                                                                                    Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1666
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1606
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         240
                                                                                                                                          179
                                                                                                                                                                                                                                                                                 69
                                                  239
                                                                                               189
```

Se e

```
K;Kurkinen, M.; Condon, M.R.; Blumberg, B.; Barlow, D.P.; Quinones, J. Biol. Chem. 262, 8496-8499, 1987
A;Title: Extensive homology between the carboxyl-terminal peptides A;Reference number: A94680; MUID:87250460
A;Accession: A29301
                                                                                                                                               A; Title: Alpha-1 type IV collagen gene evolved A; Reference number: S19094; MUID:86196099 A; Accession: S19094
                                                                                                                                                                                                                                                    A;Molecule type: DNA
A;Residues: 1-28 <BUR>
A;Residues: 1-28 <BUR>
A;Cross-references: EMBL:M23333; NID:g340878;
R;Sakurai, Y; Sullivan, M; Yamada, Y.
J. Biol. Chem. 261, 6654-6657, 1986
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Molecule type: mRNA
A;Residues: 1441-1669 < KUP>
A;Cross-references: EMBL:M18832; NID:g192282;
A;Cross-references: EMBL:M18832; NID:g192282;
R;Killen, P.D.; Burbelo, P.D.; Martin, G.R.; Y
J. Biol. Chem. 263, 12310-12314, 1988
A;Title: Characterization of the promoter for A;Reference number: S19079; MUID:88315019
A;Accession: S19079;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Molecule type: mRNA
A;Residues: 1149-1396,'S',1398-1424 <NAT>
A;Cresidues: 1149-1396,'S',1398-1424 <NAT>
A;Cross-references: EMBL.M14042; NID:9192286; PIDN:AAA37342.1; PID:9192287
A;Note: the authors translated the codon CAG for residue 1374 as Arg
A;Note: the authors M.R.; Blumberg, B.; Barlow, D.P.; Quinones, S.; Sa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         R;Nath, P.; Laurent, M.; Horn, E.; Sobel, M.E.; Zo Gene 43, 301-304, 1986
A;Title: Isolation of an alpha-1 type-IV collagen
A;Reference number: A25636; MUID:86301886
A;Accession: A25636
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      R:Oberbaeumer, I.: Laurent, M.; Schwarz, U.; Sakurai
Eur. J. Biochem. 147, 217-224, 1985
A;Title: Amino acid sequence of the non-collagenous
A;Reference number: A02864; MUID:85127033
A; ession: A02864
F ecule type: mRNA
A; Sidues: 1276-1669 <OBE>
                           A; Molecule type: DNA
A; Residues: 1110-1135;1189-1316;1342-1383;1418-1487
A; Cross-references: EMBL: M13027
                                                                                                                                                                                                                                                                                                                                                                                                                                           R;Burbelo, P.D.; Martin, G.R.; Yamada, Y.
Proc. Natl. Acad. Sci. U.S.A. 85, 9679-9882,
A;Title: Alpha1(IV) and alpha2(IV) collagen of
A;Reference number: A94220; MUID:89071759
A;Accession: A31766
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Reference number: A92702; MUID:89066738
A;Accession: A32003
A;Molecular testing the second 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              R;Killen, P.D.; Burbelo, P.; Sakurai, Y.;
J. Biol. Chem. 263, 8706-8709, 1988
A;Title: Structure of the amino-terminal p
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Molecule type: mRNA
A; Residues: 1-129 <KI1>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Cross-references: EMBL: J04448; NID: g192666;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Molecule type: DNA
A; Residues: 1-28 <KAY>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Molecule type: DNA
A; Residues: 1-28 <KI2>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Accession: A28066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Reference number: A28066; MUID: 88243724
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Cross-references: EMBL: X0677
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Tross-references: EMBL:J03944; NID:g192673; PII
Bytes, P.; Wood, L.; Theriault, N.; Kurkinen,
Biol. Chem. 263, 19274-19277, 1988
Fittle: Head to head arrangement of murine type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Cross-references: EMBL:X02201; NID:g50233; PIDN:CAA26132.1; Nath, P.; Laurent, M.; Horn, E.; Sobel, M.E.; Zon, G.; Voge.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ;Cross-references: EMBL:J03758; NID:g192669; PIDN:AAA37439.1; PID:g192670;Oberbaeumer, I.; Laurent, M.; Schwarz, U.; Sakurai, Y.; Yamada, Y.; Voge
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; Molecule type: mRNA; Residues: 1-185,'L',187-318,'S',320-368,'L',370-402,'F',404-480,'L',482-492,'H'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Reference number: S01454; Accession: S01454
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           portion
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Yamada,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     genes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Yamada,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PIDN:AAA37442.1; PID:g466503
en, M.; Vogeli, G.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PIDN: AAA37340.1;
                                                                                                                                                                                                                                                                                                                                  PIDN:AAA51625.1; PID:g535668
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PIDN: AAA37437.1; PID: 9450449
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                the alpha-1(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     and
                                                                                                                                                                                                                         differently
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     o
f
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ۷Ι
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         are
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      cDNA clone using a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     derived
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          globular
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     regulated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 murine alpha-1(IV) collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Vogeli,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         genes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              domain (NC1) of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PID:g1333876
li, G.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                collagen gene.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PID:g387115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     þу
                                                                                                                                                                                                                             fibrillar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ש
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    of mouse alpha-1(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         bidirectional
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Vogeli,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 sequence
                                                                                                                                                                                                                             collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DNA sequen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        G.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  oligodeox
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0f
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ,494-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Voss,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pihla
                                                                                                                                                                                                                         gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     promo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     cha
                                                                                                                                               DЬ
                                                                                                                                                                                                                 Qy
                                                                                                                                                                                                                                                                                               멍
                                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                           Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 QΥ
B
                                                              Qy
```

```
FEBS Lett. 115, 297-3
A;Title: Discontinuit
A;Reference number: $
A;Accession: $15909
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Molecule type: protein
A;Residues: 1173-1181', X', 1183-1184, 'X', 1186-1187, 'X', 1189-1205,'Q',1207,'XE',1210-12
3,'SP',1266,'IT',1269,'SK',1272,'DM';1275,'L',1277-1282;1316-1318,'X',1320-1327,'X',1
R;Weber, S.; Engel, J.; Wiedemann, H.; Glanville, R.W.; Timpl, R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Residues: 940-946, 'G',948-949, 'G',951-955,' R;Schuppan, D.; Glanville, R.W.; Timpl, R. Eur. J. Biochem. 123, 505-512, 1982
A;Title: Covalent structure of mouse type-IV A;Reference number: A25991; MUID:82186723
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         F:126/Binding site: carbohydrate (Asn) (covalent) #status predicted F:971,974,977,986,989,1001,1007,1019,1022,1031,1037,1040,1055,1060,1063,1075,1078,109 92,1298,1310,1313,1322,1337,1346,1349,1422,1425,1431,1437,1440/Modified site: hydroxyproline (Pro) #status experimental F:1314,1424/Modified site: 5-hydroxylysine (Lys) #status experimental F:1304/Modified site: 5-hydroxylysine (Lys) #status experimental F:1505-1511,1616-1622/Disulfide bonds: #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             F;1441-1552/Region: duplication
F;1553-1669/Region: duplication
F;31,36,39,41,434,467,470/Disulfide bonds: interchain #status
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                F;163-1440/Domain: collagenous, triple helix <COL>F;597-599/Region: cell attachment (R-G-D) motif F;781-783/Region: cell attachment (R-G-D) motif F;917-919/Region: cell attachment (R-G-D) motif F;968-970/Region: cell attachment (R-G-D) motif
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          F;28-1669/Product: collage
F;28-162/Domain: 7S <7SD>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Note: the list of introns may be incomplete C;Superfamily: collagen alpha 1(IV) chain C;Superfamily: collagen alpha 1(IV) chain C;Keywords: basement membrane; cell binding; coiled coil; duplication; F;1-27/Domain: signal sequence #status predicted <SIG> F;28-1669/Product: collagen alpha 1(IV) chain #status predicted <MAT>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             R; Weber, S.; Enge
Eur. J. Biochem.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Molecule type: protein
A;Residues: 940-946,'X',948-949,'X',951-955,'X',957-964,'X',966-991,'X',993-1003,'X',
61,'X',1063-1065,'X',1067-1080,'X',1082-1083,'X',1085-1106,'X',1108-1115,'DE',1118-11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Title: Covalent structure
A; Reference number: A25991;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C; Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Molecule type: protein A; Residues: 1435-1443 < WI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Reference number: A; Accession: S17801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Title: Subunit structure and assembly of A; Reference number: S17801; MUID: 84132058
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Accession: A25991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     F;1441-1669/Domain: carboxyl-terminal nonhelical,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Introns: 28/3; 48/3; 78/3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A; Accession: B25991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Molecule type:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Lett. 115, 297-300, 1980 tle: Discontinuities in t
1607
                                                                                                               1547
                                                                                                                                                                                                                         1487
                                                                                                                                                                                                                                                                                                                                        1429
                                                       181
                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                             <u>بــ</u>
                                                                                                                                                                                                                                                                                                                                     GLPGSMGPPGTPS--VDHGFLVTRHSQTTDDPLCPPGTKILYHGYSLLYVQGNERAHGQD 1486
                                                                                                                                                                                                                                                                                                                                                                      GLKGKRGDSGSPATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQD 60
RCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLE
                                                                                                                                                                                                                                                      LGTLGSCLQRETTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYIS 120
                                                       EFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVCM
                                                                                                                                                                                                                            LGTAGSCLRKFSTMPFLFCNINNVCNFASRNDYSYWLSTPEPMPMSMAPISGDNIRPFIS
                                                                                                            RCAVCEAPAMVMAVHSQTIQIPQCPNGWSSLWIGYSFVMHTSAGAEGSGQALASPGSCLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                     166;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   s16909;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         <WEB>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            71.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   the triple helical MUID:80246483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 93/3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                     34;
                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 951; DB 1;
Pred. No. 3.2e-78;
4; Mismatches 40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              108/3; 129/3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  the globular domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              collagen.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          sequence Gly-X-Y
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ,957;1213-1228,'X',1230-1234,'P',1236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NC1 <NC1>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Isolation,
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     of basement-membrane
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ō,
                                                                                                                                                                                                                                                                                                                                                                                                                                                     2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 order
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                basement membrane
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
  1666
                                                                                                                                                                                                                            1546
                                                          240
                                                                                                               1606
                                                                                                                                                                    180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 and
                                                                                                                                                                                                                                                                                                                                                                                                                                                     ٠,
```

1667

RR 1668 K

241

```
_ 4
```

```
C; Specie
C; Date:
C; Access
                                                                                                                                                           A; Title: Characterization of the 3' half of A; Reference number: A37969; MUID:91169491 A; Accession: S18850
                                                 A;Cross-references: EMBL:M63455; EMBL:M63456; 8; EMBL:M63470; EMBL:M63471; EMBL:M63472; EMBL
                                                                                                                                                                                                                                                                                                                                                                                              A;MoLecule type: mRNA
A;MoLecule type: mRNA
A;Residues: 313-324,'E',326-330 <REN>
A;Residues: 313-324,'E',326-330; NID:g299946; PIDN:AAD13909.1; PID:g4261609
A;Cross-references: GB:S59334; NID:g299946; PIDN:AAD13909.1; PID:g4261609
A;Hostikka, S.L.; Eddy, R.L.; Byers, M.G.; Hoeyhtyae, M.; Shows, T.B.; Tryggvason, Proc. Natl. Acad. Sci. U.S.A. 87, 1606-1610, 1990
A;Title: Identification of a distinct type IV collagen alpha chain with restricted A;Reference number: A34850; MUID:90160375
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Residues: 84-439,'GS',442-624,'LALQ',629-666,'FR',669-887,'R',889-1264,1271-1691
A;Cross-references: GB:J05558; EMBL:M58526; NID:g1314209
A;Note: submitted to the EMBL Data Libbrary, February 1991
A;Note: the authors translated the codon GCC for residue 115 as Val
R;Renieri, A.; Seri, M.; Myers, J.C.; Pihlajaniemi, T.; Massella, L.; Rizzoni, G.;
Hum. Mol. Genet. 1, 127-129, 1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Cross-references: GB:Z37153; NID:g587203; PIDN:CAA85512.1; PID:g587204 R;Pihlajaniemi, T.; Pohjolainen, E.R.; Myers, J.C. J. Biol. Chem. 265, 13758-13766, 1990
                           R;Guo,
                                                                                                                                                                                                                                           R; 2hou, J.; Hostikka, S.L.; Chow, L.T.; Genomics 9, 1-9, 1991
                                                                                                                                                                                                                                                                               A; Molecule type: mRNA
A; Residues: 914-1264,1271-1691 <HOS>
A; Cross-references: EMBL:M31115; NID:g180824; PIDN:AAA52045.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Title: Complete primary structure of the triple-helical A; Reference number: A37122; MUID:90337990 A; Accession: A37122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Reference number: A57079; MUIL A; Accession: A57079
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       C;Date: 30-Sep-1993 **sequence_revision 27-Feb-1997 **text_change 21-Jul-2000 C;Accession: S22917; A54365; A57079; A37122; I54317; A34850; S18850; I56971; R;Zhou, J.; Hertz, J.M.; Leinonen, A.; Tryggvason, K. J. Biol. Chem. 267, 12475-12481, 1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      collagen alpha 5(IV) chain precursor, renal splice form N;Alternate names: procollagen alpha 5(IV) chain N;Contains: collagen alpha 5(IV) chain precursor, leukoc
                                                                                                         A; Residues: 924-1264, 1271-1691 < ZH3>
                                                                                                                                  A; Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                     A; Accession: A34850
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Molecule type: mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Molecule type: DNA
A; Residues: 1-27 <ZH4>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      R; Zhou, J.; Mochizuki, T.; Si
Science 261, 1167-1169, 1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Molecule type: mRNA
A; Residues: 1-967 <ZHO>
A; Cross-references: GB: M90464; NID: g180826;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Reference number:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Title:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Molecule type: DNA
Residues: 1-922 <ZH2>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Reference number: A54365; MUID:94165049
Accession: A54365
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Title: Complete amino acid sequence of the human alpha-5(IV) collagen chain and Alport syndrome patient. Reference number: S22917; MUID:92316923
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Species: Homo sapiens (man)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Accession: S22917
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Prence number: I54317; MUID:93244772 ession: I54317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ross-references: GB:U04470; NID:g463378; GB:U04520; NID:g463428; PIDN:AAC27816.1; PII
hou, J.; Mochizuki, T.; Smeets, H.; Antignac, C.; Laurila, P.; de Paepe, A.; Tryggvas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Tatus: preliminary; translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       iol. Chem. 269, 6608-6614, 1
Van Damme, B.;
. 44, 1316-1321
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Leinonen, A.; Tryggvason, K.
em. 269, 6608-6614, 1994
                        Van Damme-Lombaerts
  1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ired alpha5(IV)
MUID:93361972
                                                                                                                                                                                                                                                            Tryggvason,
                                            EMBL:M63473;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             and
                                                                                                                                                                                                             the human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PIDN:AAA52046.1; PID:g553234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           converting glycine
                                                                          EMBL:M63457;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          alpha6(IV) collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            leukocyte splice
                Van
                                                                                                                                                                                                             type
                      NID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  region
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 human
                EMBL:M63458; EMBL:M63459; :g177922; PIDN:AAAA51558.1; Berghe, H.; Cassiman, J.J
                                                                                                                                                                                                             ٧I
                                                                                                                                                                                                             collagen
                                                                                                                                                                                                                                                                                     PID:g180825
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                325
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          genes in inherited
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            form
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ф
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  the
                                                                                                                                                                                                          alpha-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              glutamic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                carboxyl-termi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              176598;
                                                                                                                                                                                                          gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Tryggva
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ident
                                                                                                                                                                                                                                                                                                                                                                                                                       kidne
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            <PIH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     De
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ~
                                                                                                                                                                                                          that
                                            PIL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S
```

```
F;14/3-1573/Domain: collagen IV carboxyl-terminal repeat <CT1>F;153-1687/Domain: collagen IV carboxyl-terminal repeat <CT1>F;25,32,38,40,124,451,481,484/Disulfide bonds: interchain #status predict F;125/Binding Site: carbohydrate (Asn) (covalent) #status predicted F;1482-1570,1515-1573/Disulfide bonds: (or 1482-1573, 1515-1570) #status F;1527-1533,1638-1644/Disulfide bonds: #status predicted F;1482-1570,1636-1644/Disulfide bonds: #status predicted F;1592-1684,1626-1687/Disulfide bonds: (or 1592-1687, 1676-1604, "...
                                                                                                                                                                                                      F;27-1691/Product: collagen alpha 5(IV) chain, renal splice form #status F:27-1264,1271-1691/Product: collagen alpha 5(IV) chain, leukocyte splice F;27-41/Domain: amino-terminal nonhelical, NC2 #status predicted <NC2>F;42-1462/Region: interrupted helical
F;1463-1691/Domain: carboxyl-terminal nonhelical, NC1 #status predicted <F;1473-1573/Domain: collagen IV carboxyl-terminal repeat <CT1>F;1473-1573/Domain: collagen IV carboxyl-terminal repeat <CT2>F;1473-1583-1687/Domain: collagen IV carboxyl-terminal repeat <CT2>F;1583-1687/Domain: collagen IV carboxyl-terminal repeat <CT2>F;159,32,38,40,124,451,481,484/Disulfide bonds: interchain #status predicted F;155/Binding_site: carbohydrate (Asn) (covalent) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ed and subsequently O-glycosylated.

C;Genetics:
A;Gene: GDB:COL4A5; AyS
A;Gene: GDB:COL4A5; AyS
A;Cross-references: GDB:120596; OMIM:303630
A;Map position: Xq22-Xq22
A;Introns: 27/3; 47/3; 77/3; 92/3; 107/3; 128/3; 146/3; 155/3; 182/3; 203/3; 215/3; 2
/3; 799/1; 837/1; 893/1; 923/1; 973/1; 1006/1; 1036/1; 1082/3; 1125/1; 1152/1; 1185/1
A;Mote: the alpha 5(IV) and alpha 6(IV) chain genes are encoded on opposite strands w C;Complex: This minor type IV collagen is thought to form a heterotrimer of two alpha mong trimer amino-terminal domains (with disulfide and desmosine cross-links), dimering the collagen of the col
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Description: minor structural component of extracellular masement membrane; colled coil; extracellular matrix; C;Keywords: Alport syndrome; basement membrane; coiled coil; extracellular matrix; F;1-26,Domain: signal sequence #status predicted <SIG>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Cross-references: GB:S75903; NID:g913882; PIDN:AAB33374.1; PID:g913883 A;Note: permature termination mutation from a patient with Alport syndrome; R;Lemmink, H.H.; Schroeder, C.H.; Brunner, H.G.; Nelen, M.R.; Zhou, J.; Tryg Genomics 17, 485-489, 1993
A,7iitle: Identification of four novel mutations in the COL4A5 gene of patien A;Reference number: I54188; MUID:94010948
A;Accession: I54188
A;Accession: I54188
A;Status: translated from GB/EMBL/DDBJ
A;Molecule type: DNA
A;Residues: 1504-1607, VHDAYKC' <LEMA
B;Residues: 1504-1607, VHDAYKC' <LEMA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Residues: 1284-1291, 'TFLGYLACLV' <GU002>
A;Cross-references: GB:S69169; NID:g545097; PIDN:AAC60613.1; PID:g545098
A;Otoe: frameshift mutation in patient with Alport syndrome
R;Myers, J.C.; Jones, T.A.; Pohjolainen, E.R.; Kadri, A.S.; Goddard, A.D.
Am. J. Hum. Genet. 46, 1024-1033, 1990
A;Title: Molecular cloning of alpha5(IV) collagen and assignment of the g
A;Reference number: A35335; MUID:90252791
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     er associat
C; Function:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Cross-references: GB:S65767; NID:g425563; PIDN:AAD13967.1; PID:g4261667 A;Note: frameshift mutation from a patient with Alport syndrome; five oth C;Comment: Prolines and lysines at the third position of the tripeptide r
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Status: translated from G:
A;Molecule type: DNA
A;Residues: 1595-1602 <NAK>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       R; Nakazato, H.; Hattori, S.; Ushi
Kidney Int. 46, 1307-1314, 1994
A; Title: Mutations in the COL4A5
A; Reference number: I56975; MUID:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Accession: 156975
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Molecule type: mRNA
A; Residues: 1448-1477 < MYE>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Molecule type: mRNA
A; Residues: 1258-1276 <GUO1>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Accession: A35335
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Molecule type: mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Accession:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Note: kidney splice form
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Cross-references: GB:S69168;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Status: translated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Title: Differential splicing of COL4A5 mRNA in kidney and white blood cells: A;Reference number: I56971; MUID:94133540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Status: nucleic acid sequence not shown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Status: translated from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        associations in the interrupted helical domain (with disulfide and desmosine cross
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            OL4A5 gene in
MUID:95156893
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ushijima,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NID: g545095; PIDN: AAC60612.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Т.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Alport syndrome:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matsuura,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          .
.
                                                             1626-1684) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Koitabashi,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ø
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          possible mutation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Goddard, A.D.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ome; five other tripeptide repe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PID: g545096
                                                                                                                                                              #status predicted
                                                                                                                                                                                                                                                               predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       splice
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               of patients
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Υ.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Takada,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            form
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sheer,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   one
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ţ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       cted <M
#statu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      comp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          prim
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 91
```

```
RESULT 9
A55267
collagen alpha 5(IV) chain - dog (fragment)
C;Species: Canis lupus familiaris (dog)
C;Date: 06-Feb-1995 #sequence_revision 06-F
C:Accession: A55267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         collagen alpha 1(IV) chain - rabbit (fragment) C:Species: Oryctolagus cuniculus (domestic rabbit) C:Date: 12-May-1994 #sequence_revision 12-May-1994 C:Accession: B61228 R:Yamaguchi, N.; Sato, N.; Ko, J.S.; Ninomiya, Y. Invest. Ophthalmol, Vis. Sci. 32, 2924-2930, 1991
                                                                                                                                                                                            밁
                                                                                                                                                                                                                   δÃ
                                                                                                                                                                                                                                                  Дb
                                                                                                                                                                                                                                                                         Qy
                                                                                                                                                                                                                                                                                                        В
                                                                                                                                                                                                                                                                                                                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                          Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Title: Cloning of alpha1(IV) and alpha2(IV) collagen A;Reference number: A61228; MUID:92010685 A;Accession: B61228
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          망
                                                                                                                                       В
                                                                                                                                                              δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Molecule type: mRNA
A; Residues: 1-258 < YAM>
C; Superfamily: collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  멍
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          οy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                    Query
Best I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1628
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1688
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1448
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1568
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1508
                                                                                                                                        256
                                                                                                                                                                                             196
                                                                                                                                                                                                                                                   136
                                                                                                                                                                                                                                                                               121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               120
                                                                                                                                                                                                                       181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Local Sin
hes 165;
                                                                                                                                                                                                                                                                                                          76
                                                                                                                                                                                                                                                                                                                                   61
                                                                                                                                                                                                                                                                                                                                                               18
                                                                                                                                                                                                                                                                                                                                                                                                                                     Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       60
                                                                                                                                                                                                                                                                                                                                                                            1 GLKGKRGDSGSPATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQD 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 GLKGKRGDSGSPATWT-TRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQ 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            œ
                                                                                                                                        RR
                                                                                                                                                                 KK 242
                                                                                                                                                                                                             EFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVCM 240
                                                                                                                                                                                                                                                               RCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLE 180
                                                                                                                                                                                                                                                                                                                       LGTLGSCLQRETIMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYIS 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GLPGSMGPPGTPS--VDHGFLVTRHSQTIHDPQCPPGTKILYHGYSLLYVQGNERAHGQD 75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MKR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MXX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCL 179
                                                                                                                                                                                                                                                  RCAVCEAPAMVMAVHSQTIQIPPCPNGWSSLWIGISFVMHTSAGAEGSGQALASPGSCLE
                                                                                                                                                                                                                                                                                                        LGTAGSCLRKFSTMPFLFCNINNVCNFASRNDYSYWLSTPEPMPMSMAPMWGDNIRPFIT 135
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EEFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVC 239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     DLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYI 119
                                                                                                                                                                                                                                                                                                                                                                                                                      164;
                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               242
                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          alpha 1(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                  70.48;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     70.4%; Score 943.5; DB 1 67.9%; Pred. No. 1.6e-77;
                                                                                                                                                                                                                                                                                                                                                                                                                      34;
                                                                                                                                                                                                                                                                                                                                                                                                                     Score 943; DB 2;
Pred. No. 2.3e-78;
14; Mismatches 42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                    06-Feb-1995 #text_change
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                      42;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    #text_change
                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 258;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 1691;
                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CDNAS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    17-Mar-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1;
                                                                                                                                                                                                                                                                                                                                                                                                                   2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               rabbit corneal endothe
                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1687
                                                                                                                                                                                            255
                                                                                                                                                                                                                                                                                                                                                                                                                     1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1:
```

```
collagen alpha 3(IV) chain, medium splice form - h N;Contains: collagen alpha 3(IV) chain, splice for C:Species: Homo sapiens (man)
C:Date: 03-May-1994 #sequence_revision 12-Nov-1999
C:Accession: B49736; D49736; S69111
R;Feng, L.; Xia, Y.; Wilson, C.B.
J. Biol. Chem. 269, 2342-2348, 1994
A;Title: Alternative splicing of the NC1 domain of A;Reference number: A49736; MUID:94124597
A;Accession: B49736
A;Map position: 2q36-2q37
C;Superfamily: collagen alpha 1(IV) chain
C;Superfamily: collagen alpha 1(IV) chain
C;Keywords: alternative splicing; basement membrane; cell binding; coiled coil; extra
F;1-220/Product: collagen alpha 3(IV) chain, medium splice form (fragment) #status pr
F;1-45,169-220/Product: collagen alpha 3(IV) chain, splice from GP-V (fragment) #stat
F;22-220/Domain: carboxyl-terminal nonhelical, NC1 <NC1>
                                                                                                                                                                                                                                                                                                     A;Molecule type: mRNA
A;Residues: 22-220 <FEN2>
A;Cross references: GB:U02519; NID:9409106; PIDN:AAA18942.1; PID:9409107
A;Cross references: GB:U02519; NID:9409106; PIDN:AAA18942.1; PID:9409107
A;Note: this is the conceptual translation of the nucleic acid submitted R;Penades; J.R.; Bernal, D.; Revert, F.; Johansson, C.; Fresquet, V.J.; C.
EUR. J. Biochem. 229, 754-760, 1995
A;Title: Characterization and expression of multiple alternatively splice utoantigen and one of its alternative forms.
A;Reference number: S69111; MUID:95278230
A;Recession: S69111
                                                                                                                                                                                                                            A;Molecule type: mRNA
A;Residues: 1-45,169-204,'L',206-220
C;Comment: For the complete sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT
B49736
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Dр
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                δõ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Molecule type: mRNA
A;Residues: 1-754 <ZHE>
A;Cross-references: GB:U07888; NID:9469547; PIDN:AAB60258.1;
C;Superfamily: collagen alpha 1(IV) chain
                                                                                                                                                              A; Cross-references:
                                                                                                                                                                                       A; Gene: GDB: COL4A3
                                                                                                                                                                                                                  C; Genetics
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Molecule type: mRNA
A; Residues: 169-220 <FEN1>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Reference number: A; Accession: A55267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Title: Ca
en type IV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              R; Zheng, K.; Thor
Proc. Natl. Acad.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Status: nucleic acid sequence not shown;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Accession: D49736
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Status: nucleic acid sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local Similarity 68.4
Matches 162; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           638
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              869
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      578
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                518
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           K.; Thorner, P.S.; Marrano, P.; Baumal, R.; McInnes, tl. Acad. Sci. U.S.A. 91, 3989-3993, 1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Canine X chromosome-linked hereditary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMSMEPLKGQSIQPFI 637
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DLGTLGSCLQRETTMPELECNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYI 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              GPDGMQGPPGPPGTSSIAHGFLITRHSQTTDAPQCPHGTVQIYEGFSLLYVQGNKRAHGQ 577
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GLKGKRGDSGSPATWT-TRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQ 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EEFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SRCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCL 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SRCAVCERPAVVIAVHSQTIQIPHCPHGWDSLWIGYSFMMHTSAGAEGSGQALASPGSCL 697
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EEFRSAPFIECHGRGTCNYYANSYSFWLATVDVSDMFSKPQSETLKAGDLRTRISRC
                                                                                                                                      ces: GDB:128351; OMIM:120070
2936-2937
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A55267; MUID:94224868
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   68.8%;
68.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     not shown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 922.5; DB 2
Pred. No. 5.3e-76;
2; Mismatches 42
                                                                                                                                                                                                                                     of th
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       12-Nov-1999 #text_change 17-Mar-2000
                                                                                                                                                                                                                                     the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           translation
                                                                                                                                                                                                                                 long
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     nephritis:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        form

    human (fragment)

                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            of
                                                                                                                                                                                                                                   splice
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GP-V
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           not shown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          human
                                                                                                                                                                                                                                   form,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     genetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          alpha3(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PID: 9469548
                                                                                                                                                                                                                                     see
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        R.R.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1;
                                                                                                                                                                                                                                     PIR:CGHU3B
                                                                                                                                                                                                                                                                                                                                                                         spliced
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                              to GenBank
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gene
```

F;34-134/Domain: collagen IV carboxyl-terminal repeat

CT1>

```
N; Alternate names: protein K04H4.1
C; Species: Caenorhabditis elegans
C; Date: 03-May-1994 #sequence_revision
C; Accession: S40991; S44442; S13651; B3
A; Map position: 3
A; Map position: 3
A; Introns: 23/2; 79/1; 152/2; 288/1; 329/3; 391/1; 575/3; 660/
C; Superfamily: collagen alpha 1(IV) chain
C; Keywords: basement membrane; cell binding; coiled coil; disu
E; 43-1515/Domain: collagenous, triple helix #status predicted
E; 93-95/Region: cell attachment (R-G-D) motif
E; 1053-1055/Region: cell attachment (R-G-D) motif
E; 1396-1398/Region: cell attachment (R-G-D) motif
E; 1516-1744/Domain: carboxyl-terminal nonhelical, NC1 #status
E; 1516-1627,1628-1744/Region: duplication
E; 1580-1586,1691-1697/Disulfide bonds: #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Residues: 1-129, GFPGMPGLAGPPGQSGQNGNPGRPGLSGPPGEGGVNSQGRKGVKGESGRSGVPGLP',209-281, PV 15, 'D', 817-1260, 'P', 1262-1707, 'P', 1709-1744 <KRA>
A;Cross-references: EMBL:X56979; NID:g6675; PIDN:CAA40299.1; PID:g6676
R;Guo, X.; Johnson, J.J.; Kramer, J.M.
Nature 349, 707-709, 1991
A;Title: Embryonic lethality caused by mutations in basement membrane collagen of C. ele A;Reference number: S13651; MUID:91141582
A;Accession: S13651
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               submitted to the EMBL Data A; Reference number: $44442 A; Accession: $44442
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   8
                                                                                                                                                                                                                                                                                                                                                                    J. Biol. Chem. 264, 17574-17582, 1989
A;Title: The two Caenorhabditis elegans basement membrane A;Reference number: A34476; MUID:90008929
A;Accession: B34476
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              submitted
                                                                                                                                                                                                                                                                                                   A;Molecule type: DNA
A;Residues: 1432-1499,'Q',1501-1707,'P',1709-1744 <GU2>
A;Cross-references: EMBL:J05067; NID:g156255; PIDN:AAB59179.1; PID:g156256
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Molecule type: DNA
A; Residues: 1-129, 'G'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  R; Kramer, J.M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Molecule type: DNA
A; Residues: 1-1744 <AIN>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Accession: S40991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Reference number:
                                                                                                                                                                                                                                                          A; Gene: clb-2; emb-9
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    R;Guo,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Cross-references: EMBL:Z27078; NID:g414627; PID:g414628
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          5, D',817-1260,'P',1262-1515 <
;Cross-references: EMBL:X56979
                                                                                                                                                                                                                                                                                  Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Status: nucleic acid sequence not shown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         pcule type: DNA
| dues: 1-129, GFPGMPGLAGPPGQSGQNGNPGRPGLSGPPGEGGVNSQGRKGVKGESGRSGVPGLP', 209-281, 'PV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               121 RCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSEIM 159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    X.; Kramer, J.M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             70
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   10 GLKGKRGDSGSPATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 GLKGKRGDSGSPATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQD 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  LGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYIS 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGIALEPYIS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      the EMBL Data
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             65.1%;
99.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Library,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Library,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  <GU1>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 872; DB Pred. No. 5.4e 0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           October 1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 December 1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       on 02-Aug-1994
B34476
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Caenorhabditis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2; DB 2;
. 5.4e-72;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    159
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 #text_change
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     elegans
                                                                                                                                                                   disulfide
                                                                                                                                                                                                                                                                                                                                                                                                                       (type
                                                                                                                                                                                                               660/3; 741/3; 1028/3; 1453/1;
                                                                                                                                                  <COL>
                                                     predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 13-Aug-1999
                                                                                                                                                                                                                                                                                                                                                                                                                         IV) collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                      bond;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        69
                                                            <NC1>
                                                                                                                                                                      duplication;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            . 0;
                                                                                                                                                                                                                                                                                                                                                                                                                         genes
                                                                                                                                                                                                                                                                                                                                                                                                                           are
```

```
C;Species: Mus musculus (house mouse)
C;Date: 20-Feb-1995 #sequence_revision
C;Accession: S49488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DЪ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Molecule type: mRNA
A;Residues: 1-161 <OBE>
A;Cross-references: EMBL:X82205; NID:9559472;
C;Superfamily: collagen alpha 1(IV) chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     R;Oberbaeumer, I.
submitted to the EMBL Data Library, Octobe
A;Description: Cloning of the NC1 domains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          В
collagen alpha 3(IV) chain - sea urchin (Strongylocentrotus purpuratus) C;Species: Strongylocentrotus purpuratus (purple urchin) C;Date: 22-Sep-1993 *sequence_revision 18-Nov-1994 *text_change 13-Aug-C;Accession: A45407; A43903; A23940 R;Exposito, J.Y.; D'Alessio, M.; Di Liberto, M.; Ramirez, F. J. Biol. Chem. 268, 5249-5254, 1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                 RESULT
A45407
                                                                                                                                                                   밁
                                                                                                                                                                                                 ОÃ
                                                                                                                                                                                                                                  DЪ
                                                                                                                                                                                                                                                                 δõ
                                                                                                                                                                                                                                                                                                    g
                                                                                                                                                                                                                                                                                                                                 Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Accession:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Reference number:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ells
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      collagen alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S49488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local S
Matches 148
                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local Sin
Matches 149;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1501 GLPGTPGYPGSPGGWAPSRGFTFAKHSQTTAVPQCPPGASQLWEGYSLLYVQGNGRASGQ 1560
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1741 LKNR 1744
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1621
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1681
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          120
                                                                                                                                                                   121
                                                                                                                                                                                                    186
                                                                                                                                                                                                                                                                    126
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        60
                                                                                                                                                                                                                                     61
                                                                                                                                                                                                                                                                                                                                       66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 GLKGKRGDSGSPATWT-TRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQ
                                                                                                                                                                                                                                                                                                     ۳
                                                                                                                    13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYI 119
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EEFRAVPFIECHGRGTCNYYATNHGFWLSIVDQDKQFRKPMSQTLKAGGLKDRVSRCQVC 1740
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EEFRASPFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKAGELEKIISRCQVC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SRCTYCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCL 179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DLGQPGSCLSKFNTMPFMFCNMNSVCHVSSRNDYSFWLSTDEPMTPMMNPVTGTAIRPYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MKKR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SRCAVCEVPTQIIAVHSQDTSVPQCPQGWSGMWTGYSFVMHTAAGAEGTGQSLQSPGSCL
                                                                                                                                                                                                                                                                                                    SCLQRFTTMPFLFCNINNVCNFASRNDYSYWLSTPALMPMDMAPISGRALEPYISRCTVC
                                                                                                                                                                                                                                                                                                                     SCLQRETTMPELECNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYISRCTVC 125
                                                                                                                                                                                                    PFLECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKA 226
                                                                                                                                                                                                                                  EGPAMAIAVHSQTTAIPPCPQDWVSLWKGFSFIMFTSAGSEGARQALASPGSCLEEFRAS
                                                                                                                                                                                                                                                   EGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLEEFRAS 185
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          al Similarity 60.
148; Conservative
                                                                                                                                                                     PFIECHGRGTCNYYSNSYSFWLASLNPERMFRKPIPSTVKA 161
                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S49488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      3(IV) chain
                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       S49487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         63.6%;
                                                                                                                                                                                                                                                                                                                                                                                       62.2%;
92.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       rse mouse)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           35;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 852.5; DB
Pred. No. 3e-69;
5; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                       Score 834; DB 2;
Pred. No. 1.1e-68;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        october 1994
omains fo the
                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         20-Feb-1995 #text_change 13-Aug-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PIDN:CAA57689.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          minor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             60;
                                                                                                                                                                                                                                                                                                                                                                           5
                                                                                                                                                                                                                                                                                                                                                                                                       Length 161;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 1744;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          collagen
                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PID:9559916
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ٧I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            chains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1620
                                                                                                                                                                                                                                                                                                           60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1;
                                                                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             mouse
```

٧į

J. Biol. Chem. 268, 5249-5254, 1993
A; Title: Complete primary structure of a sea
A; Reference number: A45407; MUID:93186842

urchin type IV collagen alpha chain

and

13-Aug-1999

```
collagen alpha 2(IV) chain precursor - pig ro C; Species: Ascaris suum (pig roundworm) C; Date: 04-Dec-1992 #sequence_revision 04-Dec C; Accession: S16366 R; Pettitt, J.; Kingston, I.B. J. Biol. Chem. 266, 16149-16156, 1991 A; Title: The complete primary structure of a A; Reference number: S16366; MUID:91340768 A; Molecule type: mRNA A; Residues: 1-1763 <JBI>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Molecule type: mRNA
A; Molecule type: mRNA
A; Residues: 'P', 633-1537,'G' <WES>
A; Rosidues: 'P', 633-1537,'G' <WES>
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NR
A; Note: sequence extra
                                                                                                                                                                                                                                                                                                                                                                                                                RESULT
S16366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    рь
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Note: sequence extracted from NCBI backbone R; Wessel, G.M.; Etkin, M.; Benson, S. Dev. Biol. 148, 261-272, 1991
A;Cross-references: GB:M67507;
C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Reference number: A43903; MUID:92038439 A; Accession: A43903
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Molecule type: nucleic acid
A; Residues: 1-1752 <EXP>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Accession:
A; Status: pro
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Title: Primary mesenchyme cells of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches 144;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ecule type: DNA
residues: 742-812 <VEN>
Cross-references: EMBL:M13206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1750
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1690
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1570
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1512
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              241 KKR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1 GLKGKRGDSGSPATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQD 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              LGTLGSCLQRETTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYIS 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RNQ 1752
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            GFPGTKGEAGIPG--SSSGFFITRHSQTTSIPQCPQGTAKMWHGYSLLFVQGNERGHGQD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RCVVCEAPAQVLTVHSQTVNIPDCPDRWGVLWIGYSFWMHTGPGGEGSGQMLSSPGSCLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           on: A45407
preliminary;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DFRSSPFIECHGDGKCNYYATTYTFWFSSITGNAQFTMPQSETLKAGSLRTRVSRCAVCL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  RCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     site: allysine (Lys) #status
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      not compared
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         62.1%;
59.3%;
                              NID:g159648;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           37;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 832; DB 2;
Pred. No. 2.2e-67;
7; Mismatches 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             with
                                                                                                                                                                                                                                                                                                                                                                               pig roundworm
                                                                                                                                                                                                                                                                                                            04-Dec-1992 #text_change 13-Aug-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      conceptual translation
                                                                                                                                                                                       þ
                              PIDN:AAA18014.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           urchin embryo require an autonomously prod
                                                                                                                                                                                       nematode alpha-2(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (NCBIP:126841)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        of a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ; PID:g238617
NCBIP:64573)
                          PID:g159649
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                trimer;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Strongylocentrotus purp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ν,
                                                                                                                                                                                       collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                triple helix
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  180
                                                                                                                                                                                       and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ۲
                                                                                                                                                                                       the
                                                                                                                                                                                       part
```

04 04 05 05

ب

GLKGKRGDSGSP-

1504 GLDGQPGGPGAPGLPGAPGAAGPAYRDGFVLVKHSQTTEVPRCPEGQTKLWDGYSLLYIE 1563

---ATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQ 51

52 GNQRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPIT 111

```
F:43-1529/Domain: collagenous #status predicted COL>
F:497-199/Region: cell attachment (R-G-D) motif
F:1530-1763/Domain: carboxyl-terminal nonhelical, NC1 #status predicted
F:1530-1638/Domain: repeat NC1 #status predicted <NC11>
F:1639-1763/Domain: repeat NC1 #status predicted <NC12>
F:1639-1763/Domain: repeat NC1 #status predicted <NC12>
F:1639-1763/Domain: repeat NC1 #status predicted
F:126/Binding site: carbohydrate (Asn) (covalent) #status predicted
F:1593-1599,1702-1709/Disulfide bonds: #status predicted
                                                                                                                                                                                                                                                                                                                                                               R;Wu, X.; Le, T.T.
submitted to the EMBL Data Library, April 1996
submitted to the EMBL Data Library, April 1996
cosmid F01G12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Introns: 229/3; 266/3; 305/3; 360/3; 424/1; 489/1; 548/1; 656/3; 790/1; 891/1; C;Superfamily: collagen alpha 1(IV) chain c;Keywords: alternative splicing; basement membrane; cell binding; coiled coil; d F;1-26/Domain: signal sequence #status predicted <SIG>F;27-1763/Product: collagen alpha 2(IV) chain #status predicted <MAT>F;27-62/Domain: non-collagenous NH1 #status predicted <NH1>
                                                                                                        A:Map position: X
A:Introns: 8/2; 26/3; 47/3; 81
C:Superfamily: collagen alpha
                                                                                                                                                                                                                                                                                                                                   A; Reference number: A; Accession: T29350
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  hypothetical protein F01G12.5a - Caenorhabditis elegans
C;Species: Caenorhabditis elegans
C;Date: 15-Oct-1999 #sequence_revision 15-Oct-1999 #text_change 18-Feb-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Вb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Вþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QУ
                                                                                                                                                                                                                         A;Cross-references: EMBL:U53342; PIDN:AAA96216.1; GSPDB:GN00028; A;Experimental source: strain Bristol N2; clone F01G12
                                                                                                                                                                                                                                                                  A; Molecule type: DNA
A; Residues: 1-1758 < WUX>
                                                                                                                                                                                                                                                                                                                                                                                                                                                C; Accession: T29350
                                                                                                                                                                               A;Gene: CESP:F01G12.5a
                                                                                                                                                                                                                                                                                                          A; Status: preliminary; translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Best Local Similarity 57.9 Matches 140; Conservative
                    Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1753 IR 1754
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1693
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1633
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1575
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1515
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               181
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    121
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1 GLKGKRGDSGSPATWTTRGFVFTRHSQTTAIPSCPEGTVPLYSGFSFLFVQGNQRAHGQD 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RCTVCEGPAIAIAVHSQTTDIPPCPHGWISLWKGFSFIMFTSAGSEGTGQALASPGSCLE 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYIS 120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      GLPGPSGPPGPPSYKDGFLLVKHSQTSEVPQCPPGMVKLWDGYSLLYIEGNEKSHNQD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MK 241
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LGHAGSCLSRFSTMPFLFCDVNNVCNYASRNDKSYWLSTTA--PIPMMPVSEGGIEPYIS
    Conservative
                    58.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  59.4%;
57.9%;
                                                                                                          81/1; 144/1; 202/3;
ha 1(IV) chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           41;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 796.5;
Pred. No. 3.8e
11; Mismatches
Score 783.5; DB 2
Pred. No. 5.7e-63;
1; Mismatches 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  796.5;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  3.8e-64;
                                         DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DВ
                                                                                                                                   228/3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    cell binding; coiled coil; disul
                                         Length
                                                                                                                                   264/3;
                                                                                                                                   303/3;
  15;
                                                                                                                                                                                                                                                CESP: F01G12.5a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ψ
Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                   358/3; 449/2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1752
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1632
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1692
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1574
    4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             963/
```

ļ

Copyright

GenCore version 4.5 (c) 1993 - 2000 Comp

Compugen

```
Minimum
Maximum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Result
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ŏ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         9
             Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ..
         seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Issued_Patents_AA:*
1: /cgn2_6/ptodata/2,
2: /cgn2_6/ptodata/2,
3: /cgn2_6/ptodata/2,
4: /cgn2_6/ptodata/2,
5: /cgn2_6/ptodata/2,
6: /cgn2_6/ptodata/2,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query
Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       100
100
95
           295
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
1166.29
11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         185757 seqs, 19210857 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BLOSUM62
Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-09-543-371-10_COPY_54_124
390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     April 13, 2001, 15:41:57; Search time 31.4 Seconds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QRAHGQDLGTLGSCLQRFTT.....MNMAPITGRALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /cgn2_6/ptodata/2/iaa/5A_COMB.pep:*
/cgn2_6/ptodata/2/iaa/5B_COMB.pep:*
/cgn2_6/ptodata/2/iaa/6A_COMB.pep:*
/cgn2_6/ptodata/2/iaa/6B_COMB.pep:*
/cgn2_6/ptodata/2/iaa/B_COMB.pep:*
/cgn2_6/ptodata/2/iaa/PCTUS_COMB.pep:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length
           1694
6288
6288
6288
6289
3898
3898
520
520
527
574
612
612
612
364
275
275
364
277
389
354
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gapext 0.5
    US-08-399-889-25
US-09-167-364-25
US-08-399-889-25
US-08-9167-364-24
US-09-167-364-24
US-09-167-364-24
US-08-914-848-22
US-08-916-551-3
US-08-98-141-2
US-08-876-991-2
US-08-876-991-2
US-08-949-386-28
US-08-949-386-28
US-08-959-7
US-08-895-590-7
US-08-882-677-7
US-08-812-586-49
US-08-918-255-17
US-08-812-586-49
US-08-8118-270-62
US-08-118-270-62
US-08-118-270-62
US-08-750-77-62
US-08-750-77-62
US-08-750-77-62
US-08-750-77-62
US-08-750-77-62
US-08-750-77-62
US-08-750-77-62
US-08-750-77-62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            43.439 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (without alignments)
Sequence 25, Appl
Sequence 24, Appl
Sequence 24, Appl
Sequence 27, Appli
Sequence 28, Appli
Sequence 29, Appli
Sequence 29, Appli
Sequence 27, Appli
Sequence 27, Appli
Sequence 17, Appli
Sequence 17, Appli
Sequence 17, Appli
Sequence 16, Appli
Sequence 16, Appli
Sequence 16, Appli
Sequence 27, Appli
Sequence 28, Appli
Sequence 29, Appli
Sequence 29, Appli
Sequence 20, Appli
Sequence 21, Appli
Sequence 22, Appli
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Description
```

GENERAL INFORMATION:
APPLICANT: Reeders, Stephen T
APPLICANT: Morrison, Karen
E
APPLICANT: Hudson, Billy G
TITLE OF INVENTION: Alpha-3 Chain Type IV Co
FILE REFERENCE: 951263B
CURRENT APPLICATION NUMBER: US/09/167,364
CURRENT FILING DATE: 1998-10-07
EARLIER APPLICATION NUMBER: 08/399889
EARLIER FILING DATE: 1995-03-07

Collagen Polypeptides

US-09-167-364-25

Sequence 25, Application US/09167364 Patent No. 6007980

04 04 04

> 28 61

ALEPYISECTV 71

QRAHGQDLGTLGSCLQRETTMPFLECNVNDVCNEASRNDYSYWLSTPALMPMNMAPITGR

87

88 ALEPYISRCTV 98

?	US PER SE		
Query M Best Lo Matches	RESULT 1 US-08-399-889-25 ; Sequence 25, Application US/ Patent No. 5973120 ; GENERAL INFORMATION: APPLICANT: Reeders, Stephen APPLICANT: HOSTISON, KATEN APPLICANT: HOSTISON, KATEN APPLICANT: HOSTISON, KATEN APPLICANT: HOSTISON, MILLY TITLE OF INVENTION: Alpha-3 FILE REFERENCE: 951263A CURRENT APPLICATION NUMBER: CURRENT FILING DATE: 1995-0 EARLIER FILING DATE: 1995-0 EARLIER FILING DATE: 1990-1 ; NUMBER OF SEQ ID NOS: 25 SOFTWARE: PATENTIN Ver. 2.0 SEQ ID NO 25 LENGTH: 218 TYPE: PRT ORGANISM: Human US-08-399-889-25		20 20 20 30 30 30 30 30 30 30 30 30 30 40 40 40 40 40 40 40 40 40 40 40 40 40
Match Local les 7	1 - 88 - 88 - 88 - 88 - 88 - 88 - 88 -		000000 4444 4444 000000 00000 00000
	259 - 2 259 - 2 259 - 2 259 - 2 250 - 2 250 - 2 250 - 2 250 - 2 250 - 2 250 - 2 261 - 2 270 - 2 271 - 2 271 - 2 271 - 2 271 - 2 272 - 2 273 - 2 274 - 2 275 - 2 276 - 2 277		
i i	-25 5973 5973 NORMAN Ree MOR MOR MOR MOR MOR MOR MOR MOR MOR MOR		
Similarity 1; Conser	25 Applicati 973120 973120 Reeders, (Morrison, Hudson, Biron, Licarison,		
ns	in Name of State of S		00000000000004444
larity	√3 :: 1 :: 2 B		
ai C	icon The The The The The The The The The The		374 374 374 515 515 797 1316 1336 245 245 211 7178 361 179 797
100 100 ive	ion US/ Stephen Karen illy G Alpha-3 63A 63A 63B		155 155 155 155 155 155 155 155 155 155
100.0%; 100.0%; ive	1 3 E O		8456666666666
0, 5, 5,	/08399889B n T E 3 Chain Type IV : US/08/399,889B 03-07 : 07/621091 11-30 0		SS
, PI	988 in 621	~	US-09 US-09 US-09 US-09 US-09 US-08 US-08 US-08 US-08 US-08 US-08 US-08 US-08 US-08 US-08 US-08 US-08 US-08 US-08 US-09 US-08 US-09 US-08 US-09 US-08 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US-09 US
Score Pred. Mis	Ту. Ту.	LI	0088-44-9-00-20-20-20-20-20-20-20-20-20-20-20-20-
	φ 0	ALIGNMENTS	US-09-055-6 PCT-US95-06 PCT-US95-06 PCT-US95-06 PCT-US95-06 PCT-US95-06 PCT-US95-06 PCT-US95-06 PCT-US95-06 PCT-US95-06 PCT-US96-073-3 PCS-08-290-7
390; No. natch	VI VI	EN	000017000007770000000
, hes	g C	rs	-055-699-2: -273-565-2: S95-06385273-362-3 -273-362-3 -700-0138290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C290-731C
DB Se	IV Collagen		US-09-055-699-25 US-09-273-565-25 PCT-US95-06385-2 US-09-073-362-3 US-09-073-362-3 US-08-700-0138-21 US-08-290-731C-6 US-08-825-781-1 US-09-0243-920-1 US-09-073-362-1 US-08-070-0138-6 US-08-700-0138-6 US-08-700-0138-27
2; -43; 0;	зде		7
i			
Length Indel	01		
ength Indels	уре		
1 21	t di		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
18;	Polypeptides		Sequence
0	ů		
6			
Gaps			2225, 225, 227, 23, 24, 25, 25, 25, 27, 27, 27, 27, 27, 27, 27, 27, 27, 27
			Appl Appl Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli
0			
0;			

```
Вb
                                                                                                                                                                                                                                                                                                                                               Qy
                                                                                                                                                                                                                                                                                                                                                                                    D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Дb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                     US-09-167-364-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ; ORGANISM: Calf
US-08-399-889-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; ORGANISM: Human US-09-167-364-25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 US-08-399-889-24
                                                                                                                                                                                                      Sequence 24, Application US/09167364 Patent No. 6007980
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SOFTWARE: PatentIn Ver. SEQ ID NO 24
LENGTH: 471
                                                                                                                                                                                   GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NUMBER OF SEQ ID NOS: 25
SOFTWARE: Patentin Ver.
SEQ ID NO 25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sequence 24,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Patent No. 5973120
                                                     CURRENT APPLICATION NUMBER: US/09/167,364
CURRENT FILING DATE: 1998-10-07
                                                                                     APPLICANT: Hudson, Billy G
TITLE OF INVENTION: Alpha-3 Chain Type IV Collagen Polypeptides
FILE REFERENCE: 951263B
                                                                                                                                            APPLICANT: Reeders, Stephen
APPLICANT: Morrison, Karen I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: Reeders, Stephen T
APPLICANT: Morrison, Karen E
APPLICANT: Hudson, Billy G
TITLE OF INVENTION: Alpha-3 Chain Type IV Collagen Polypeptides
FILE REFERENCE: 951263A
EARLIER APPLICATION NUMBER: 08/399889
EARLIER FILING DATE: 1995-03-07
NUMBER OF SEQ ID NOS: 25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EARLIER APPLICATION NUMBER: 07/621091
EARLIER FILING DATE: 1990-11-30
NUMBER OF SEQ ID NOS: 25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CURRENT APPLICATION NUMBER: US/08/399,889B CURRENT FILING DATE: 1995-03-07
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TYPE: PRT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                        ches
                                                                                                                                                                                                                                                                                                             341 ALEPYISRCTV 351
                                                                                                                                                                                                                                                                                                                                                                              281 EQAHGQDLGTLGSCLQRFTTMPFLFCNINDVCNFASRNDYSYMLSTPAMIPMDMAPITGR
                                                                                                                                                                                                                                                                                                                                               61 ALEPYISRCTV 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          88 ALEPYISRCTV 98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61 ALEPYISRCTV 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       28 QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 87
                                                                                                                                                                                                                                                                                                                                                                                                 1 QRAHGQDLGTLGSCLQRFTIMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60 ::||||||||||||||
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1 QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                      65;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PatentIn Ver. 2.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Application US/08399889B
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                100.0%;
                                                                                                                                                Karen E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       95.1%;
91.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 371; DB 2;
Pred. No. 1.9e-40;
6; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 390; DB 3;
Pred. No. 2.5e-43;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 471;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 218;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
```

```
Ωy
В
                                                                                                                                            US-08-494-168-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QУ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ΩV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; TYPE: PRT
; ORGANISM: Calf
US-09-167-364-24
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   US-08-494-168-2
                                                              Matches
                                                                                            Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 2, Application US/08494168 Patent No. 5731192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQ ID NO 24
                                                                             Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                               APPLICATION NUMBER: US 08/112,465
FILING DATE: 27-AUG-1993
ATTORNEY/AGENT INFORMATION:
NAME: SAXE, Bernhard D.
REGISTRATION NUMBER: 28,665
REFERENCE/DOCKET NUMBER: 40397/104/
TELEPHONE: (202)672-5300
TELEPHONE: (202)672-5300
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SOFTWARE: PatentIn Ver.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GENERAL INFORMATION:
                                                                                                                                                                                                                                         INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT: Reeders,
APPLICANT: Zhou, Jin
TITLE OF INVENTION:
TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LENGTH:
1494 CLWRGNTKPTTRTWALLAPVCPASAPCPHYCNINEVCHYARRNDKSYWLSTTA--PIPMM 1551
                                                                                                                                                                                                      SEQUENCE CHARACTERISTICS:
LENGTH: 1694 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NUMBER OF SEQUENCES: 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                341 ALEPYISRCTV 351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              281 EQAHGQDLGTLGSCLQRFTTMPFLFCNINDVCNFASRNDYSYWLSTPAMIPMDMAPITGR 340
                               14 CLQRFTTMPFL--
                                                                                                                                                                                                                                                                                                                                                                                                                               CLASSIFICATION: 435
                                                                                                                                                                            TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                   FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COMPUTER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COUNTRY:
                                                                                                                                                                                                                                                                     TELEFAX:
                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             OPERATING SYSTEM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61 ALEPYISRCTV 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60 ::|||||||||||||||
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       471
                                                              30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            20007-5109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        F: 3000 K Street, N.W., Suite 500 Washington, D.C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Similarity
                                                                                                                                                                                       amino acid
                                                                                                                                                                                                                                                          904136
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              USA
                                                              Conservative
                                                                                                                                                                                                                                                                       (202)672-5399
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PatentIn Release #1.0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Reeders, Stephen T.
                                                                                                                                                                          linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               IBM PC compatible SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Foley & Lardner
                                                                                                                                                         protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Jing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Collagen COL4A6: Gene, Protein and Method of Detecting Collagen Deficiency
                                                                             36.9%;
39.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          95.1%;
91.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                US/08/494,168
                                                              10;
                            -----FCNVNDVCNFASRNDYSYWLSTPALMPMNMA 55
                                                                                                                                                                                                                                                                                                                   40397/104/BABR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 371; DB 3; Pred. No. 1.9e-40;
                                                                            Score 144; DB 1;
Pred. No. 3.3e-10;
                                                             Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Version
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                #1
                                                             16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0;
                                                                                         Length 1694;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 471;
                                                             Indels
                                                             20;
                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                             2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
```

В δÃ

1552 PVSQTQIPQYISRCSV 1567

56 PITGRALEPYISRCTV

71

```
RESULT 7
US-08-914-848-22
; Sequence 22, Application US/08914848
                                                                                  Вþ
                                                                                                            Ş
                                                                                                                                             Ъ
                                                                                                                                                                       δÃ
                                                                                                                                                                                                                                                                               ; MOLECULE TYPE: protein US-07-952-853-22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 6
US-07-952-853-22
                                                                                                                                                                                                                                  Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Sequence 22, Application US/07952853 Patent No. 5863783
                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                        Best
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                         NFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25 (EPO)
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                      REGISTRATION NUMBER: 29,959
REFERENCE/DOCKET NUMBER: 24
TELECOMMUNICATION INFORMATION:
TELEPHONE: 415-813-5600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                ATTORNEY/AGENT INFORMATION:
NAME: Murashige, Kate H.
REGISTRATION NUMBER: 29,
                                                                                                                                                                                                                                                                                                                                                         SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT:
                                                                                  323
                                                                                                                                          263 IGDLCDRPGREGTWTYYNTDGLGLHEYFYWCEDLGLVPVLGVWDGFALESGGNTPLTGDA 322
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               UMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PPLICANT:
                                                                                                                                                                                                                                                                                                                                TYPE:
                                                                                                              62 LEPYI 66
                                                                                                                                                                         28 VNDVCNFASR---
                                                                                                                                                                                                                     Local Similarity
                                                                                                                                                                                                                                                                                                             TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                        TELEFAX:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICATION NUMBER: US
FILING DATE: 19921125
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STATE: California
ZIP: 94304-1018
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STREET:
                                                                                                                                                                                                                                                                                                                                          LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ADDRESSEE:
                                                                                 LTPYI 327
                                                                                                                                                                                                       16;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Palo Alto
                                                                                                                                                                                                                                                                                                                           amino acid
                                                                                                                                                                                                                                                                                                                                           628 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  755 Page Mill Road
                                                                                                                                                                                                                                                                                                                                                                                                        415-494-0792
                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Andreoli, Peter M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Flipphi, Michel J. A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Coutel, Yves
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Bakhuis, Janna
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Van Der Veen, Peter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      De Graaff,
                                                                                                                                                                                                                                                                                                                linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Visser,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Van Heuvel, Margaretha
Bakhuis, Janna G.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Jacob
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Abraham
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORIGIN
                                                                                                                                                                                                                     16.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MOLECULES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CLONING AND EXPRESSION OF DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ENCODING ARABINAN-DEGRADING ENZYMES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Leendert H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US/07/952,853
                                                                                                                                                                                                                                                                                                                                                                                                                                                    246152003500
                                                                                                                                                                         -NDYSYWLSTPALMPM--
                                                                                                                                                                                                                     Score 63; DB Pred. No. 3.6;
                                                                                                                                                                                                       Mismatches
                                                                                                                                                                                                                                    DB 2;
                                                                                                                                                                                                       15;
                                                                                                                                                                                                                                  Length 628
                                                                                                                                                                                                       Indels
                                                                                                                                                                         ---NMAPITGRA 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             OF
                                                                                                                                                                                                       26;
                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                       2
```

```
RESULT 8
US-08-766-551-3
                                                                                                                                                                               밁
                                                                                                                                                                                                        Qy
                                                                                                                                                                                                                                         망
                                                                                                                                                                                                                                                                    Qy
                                                                                                                                                                                                                                                                                                                                                                          ; TOPOLOGY: linear; MOLECULE TYPE: protein US-08-914-848-22
                                                                                      Sequence 3, Application US/08766551 Patent No. 5840569
                                                                                                                                                                                                                                                                                                   Matches
                                                                                                                                                                                                                                                                                                                Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Patent No. 5989887
                                                        GENERAL INFORMATION:
APPLICANT: Hillma
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                  INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
LENGTH: 628 amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REFERENCE/DOCKET NUMBER: 24
TELECOMMUNICATION INFORMATION:
TELEPHONE: 415-813-5600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FILING DATE: 25-NOV-1992
ATTORNEY/AGENT INFORMATION:
NAME: Murashige, Kate H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SOFTWARE: Patentin Release #1.0, Version #1.25 CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TITLE OF INVENTION:
TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CORRESPONDENCE ADDRESS
TITLE OF INVENTION:
                          APPLICANT:
                                           APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STREET: /-
CTTY: Palo Alto
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT:
              APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TELEFAX: 911
TELEFAX: 706141
                                                                                                                                                                                                                                         263 IGDLCDRPGREGTWTYYNTDGLGLHEYFYWCEDLGLVPVLGVWDGFALESGGNTPLTGDA 322
                                                                                                                                                                              323 LTPYI 327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   STATE: California
ZIP: 94304-1018
                                                                                                                                                                                                           62 LEPYI 66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   TELEPHONE: 415 CT. TELEPHONE: 415-494-0792
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                     28 VNDVCNFASR---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           REGISTRATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                    amino acid
       Hillman, Jennifer L.
Bandman, Olga
Hawkins, Phillip R.
Goli, Surya K.
                                                                                                                                                                                                                                                                                                                                                                                                                                  628 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  755 Page Mill
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bakhuis, v...
                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Van Der Veen, Peter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 De Graaff, Leendert H.
Flipphi, Michel J. A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Harder,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Van Heuvel, Margaretha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Andreoli,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Visser, Jacob
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MORRISON & FOERSTER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CLONING AND EXPRESSION OF DNA
MOLECULES ENCODING ARABINAN-D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Abraham
                                                                                                                                                                                                                                                                                                                16.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ORIGIN
NOVEL HUMAN GTP-BINDING PROTEINS
                                                        Jennifer L.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Janna
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Peter M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      us 07/952,853
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US/08/914,848
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         29,959
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Road
                                                                                                                                                                                                                                                                                                  Score 63; DB Pred. No. 3.6; 8; Mismatches
                                                                                                                                                                                                                                                                                                  8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              246152003500
                                                                                                                                                                                                                                                                    NDYSYWLSTPALMPM---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ARABINAN-DEGRADING ENZYMES OF FUNGAL
                                                                                                                                                                                                                                                                                                                              2
                                                                                                                                                                                                                                                                                                   15;
                                                                                                                                                                                                                                                                                                                            Length 628
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (EPO)
                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                    ----NMAPITGRA 61
                                                                                                                                                                                                                                                                                                   26;
                                                                                                                                                                                                                                                                                                  Gaps
```

2;

CORRESPONDENCE ADDRESS:

ADDRESSEE:

STREET: 3174 Por CITY: Palo Alto

3174 Porter Drive

INCYTE PHARMACEUTICALS, INC

CA

NUMBER OF SEQUENCES:

```
밁
                                                                                                                                                                                                                                                                                                              US-08-098-141-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US-08-766-551-3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local :
                                                                                                                                                                                                                                                                            Sequence 2, Application US/08098141 Patent No. 5441875
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                              GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 REFERENCE/DOCKET NUMBER: PF
TELECOMMUNICATION INFORMATION:
TELEPHONE: 415-855-0555
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICATION NUMBER: UFILING DATE: Herewith CLASSIFICATION: 514 PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SOFTWARE: FastSEQ Version 2.0 CURRENT APPLICATION DATA:
COMPUTER READABLE FORM:
MIDJUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMPUTER READABLE FORM:
MEDIUM TYPE: Diskett
                                                                                                                                                                                                                          APPLICANT: Hediger Ph.D., Matthias A. TITLE OF INVENTION: Urea Transporter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IMMEDIATE SOURCE:
LIBRARY: SEQ I
CLONE: 538177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                          CORRESPONDENCE ADDRESS
                                                                                                                                                                                                             NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                    125 TDLAGR 130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local Similarity
nes 19; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMPUTER:
                                                                                     COUNTRY: UZIP: 02119
                                                                                                                                                                                                                                                                                                                                                                                                                  55 APITGR 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                    67 GKEL--FSEMLDKLWESPNVLCLVYDVTNEESFNNCSKWLEKARSQAPGISLPGVLVGNK 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NAME: Billings, Lucy J. REGISTRATION NUMBER: 36,749
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            OPERATING SYSTEM:
                                                                                                                                                      ADDRESSEE: Choate, Hall STREET: Exchange Place,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TELEFAX:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWL-----STPALMPMNM 54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    94304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 amino acid
                                                                                                                                        Boston
                                                                                                                      MΑ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               186 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     415-845-4166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                      U.S.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQ ID NO: 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IBM Compatible
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Herewith
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Diskette
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       15.4%;
                                                                                                                                                                                                                          Urea Transporter Polypeptide
                                                                                                                                                                          Hall
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US/08/766,551
                                                                                                                                                        & Stewart
53 State Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 60; DB Pred. No. 2; 8; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PF-0168 US
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 2; Length 186;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        27;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        2;
```

```
В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; MOLECULE TYPE: US-08-098-141-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-08-876-991-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence 2, Application US/08876991 Patent No. 5925360
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          INFORMATION FOR SEQ ID NO:
            FILING DALL 424
CLASSIFICATION: 424
ATTORNEY/AGENT INFORMATION:
NAME: William M. Blackstone
NAME: William M. Blackstone
29,772
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE CHARACTERISTICS:
LENGTH: 397 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                CLASSIFICATION: 424
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                   SOFTWARE: PatentIn Release #1.0, CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                        COMPUTER READABLE FORM:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NUMBER OF SEQUENCES: 1
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: Gregor Meyers, Tillmann R menapf,
APPLICANT: Heinz-J rgen Thiel
TITLE OF INVENTION: Hog cholera virus vaccine and diagnostic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STREET: LJ.
STREET: ACKVILLE
TTY: Rockville
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            135 FSDKGDYYWWLLLPVIVMSMSCPILSSALGTIFSK 169
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FILING DATE: 1: CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            34 FASRNDYSYWLSTPALMPMNMAPITGRALEPYISR 68
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TELEFAX:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NAME: Kaplan Esq., Warren A. REGISTRATION NUMBER: 34,199
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                    COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDIUM TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REFERENCE/DOCKET NUMBER:
                                                                                                     APPLICATION NUMBER:
                                                                                                                                                                                                                                                               FILING DATE:
                                                                                                                                                                                                                                                                                                                                    FILING DATE:
                                                                                                                                                                                                                                                                                                                                                   APPLICATION NUMBER:
REFERENCE/DOCKET NUMBER:
                                                                                                                                        APPLICATION NUMBER:
                                                                                                                                                                                                             APPLICATION NUMBER:
                                                                                                                                                                                                                             FILING DATE:
                                                                                                                                                                                                                                               APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                APPLICATION NUMBER:
                                                                                                                                                          FILING DATE:
                                                                                                                                                                          APPLICATION NUMBER:
                                                                                                                                                                                          FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                20850
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            E: Biotechnology Research Institute 1330-A Piccard Drive
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          617:227-7566
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Organon Teknika Corporation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            617:227-5020
                                                                                                                                                                                                                                                                                                                                                                                                                                      Floppy disk
                                                                                                 22-NOV-1991
UMBER: US 07/494,991
                                                                                                                                                                                                                                                                                                                                 16-JUN-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                19930723
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 14.6%;
31.4%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  US/08/098,141
                                                                                                                                                                                                           US/08/469,702
                                                                                                                                        07/797,554
                                                                                                                                                                          US/08/123,596
                                                                                                                                                                                                                                             US/08/650,584
                                                                                                                                                                                                                                                                                                                                                   US/08/876,991
                                                                                                                                                                                                                                                                              US/08/747,577
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 6; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 57; DB 1; Pred. No. 12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               092662-001
                                                                                                                                                                                                                                                                                                                                                                                     Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
```

0,

TELEPHONE: (301) 258-INFORMATION FOR SEQ ID NO:

SEQUENCE CHARACTERISTICS:

LENGTH:

3898 amino acids

TELECOMMUNICATION INFORMATION:

US-08-876-991-2

TYPE: amino acid
TOPOLOGY: linear
MOLECULE TYPE: protein

Query Match

Length 3898;

```
; TOPOLOGY: 11;; MOLECULE TYPE: US-09-059-853-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
В
                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sequence 2, Application US/09059853 Patent No. 5935582
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                  TELEPHONE: (301) 258-5200 INFORMATION FOR SEQ ID NO: 2:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   9-059-853-2
                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRIOR APPLICATION DATA:
APPLICATION NUMBER: 0
FILING DATE: 22-NOV-1
                                                                                                                                                                                                                                                                                                                                                                        FILING DATE: 16-MAR-1990
ATTORNEY/AGENT INFORMATION:
NAME: William M. Blackstone
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOTTWARE: PATENTIN Release #1.0, Version
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: Gregor Meyers, Tillmann R menapf,
APPLICANT: Heinz-J rgen Thiel
TITLE OF INVENTION: Hog cholera virus vaccine and diagnostic
                                                                                                                                                                                                                                                              SEQUENCE CHARACTERISTICS
                                                                                                                                                                                                                                                                                                                     TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STREET: 100
CTTY: Rockville
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CORRESPONDENCE ADDRESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              472 GRQLSTAGKKLERRSKTWFGAYALSPYCNVTRKIGYIWYTNNCTPACLPKN 522
472 GRQLSTAGKKLERRSKTWFGAYALSPYCNVTRKIGYIWYTNNCTPACLPKN 522
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ADDRESSEE: Organon Teknika Corporation
ADDRESSEE: Biotechnology Research Institute
STREET: 1330-A Piccard Drive
                                                                                                                                                                                                                                                                                                                                       REGISTRATION NUMBER: 29
REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Local Similarity
nes 15; Conserv
                                                                        Local Similarity
les 15; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER: US 07 FILING DATE: 16-MAR-1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: US/09/059,853
                                                                                                                                                                                                                                             LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 5 GQDLGTLGSCLQRETTMPELECNVNDVCNFASRNDYSYWLS--TPALMPMN 53
                                     S
                   GQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDVSYWLS--TPALMPMN 53
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              INFORMATION:
                                                                                                                                                                                                                       amino acid
                                                                                                                                                                                                                                               3898 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    U.S.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  14.1%; Score 55; DB 2; ilarity 29.4%; Pred. No. 3.6e+02; Conservative 10; Mismatches 24
                                                                        Conservative
                                                                                                                                                                                    protein
                                                                                        14.18; Score 55;
29.48; Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                   US 07/494,991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     07/797,554
                                                                                                                                                                                                                                                                                                                                                         29,772
                                                                      10;
                                                                        Mismatches
                                                                                        3.6e+02;
                                                                                                             DB 2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        #1.25
                                                                        24;
                                                                                                           Length 3898;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Indels
                                                                        Indels
                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1.
```

```
RESULT
                                                                                                                                                                                 В
                                                                                                                                                                                                              Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US-08-949-386-28
                                                                                                                US-08-450-562-28
                                                                                                                                                                                                                                                                                                                                 US-08-949-386-28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Patent No. 60300-
Patent No. 60300-
PATENAL INFORMATION:
                                                                              Sequence 28, Application US/08450562 Patent No. 6096514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence 28,
                                                                                                                                                                                                                                                                            Query Match
                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                Best Local Similarity
                                              GENERAL INFORMATION:
APPLICANT: Harpol
                                                                                                                                                                                                                                                                                                                                                                                                                            TELEFAX: (619) 238-000 INFORMATION FOR SEQ ID NO:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRIOR APPLICATION DATA:
APPLICATION NUMBER: US/0
FILING DATE: 11-AUG-1994
                                                                                                                                                                                                                                                                                                                                           MOLECULE TYPE: protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FILING DATE: 11-AUG-1993
ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TITLE OF INVENTION:
                              APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE CHARACTERISTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICANT:
                                                                                                                                                                              384 LEDACEHLGEYLEAYWRATHTTSSTPMTPLLGRNLGSTALSPY 426
                                                                                                                                                                                                              28 VNDVCNFASRNDYSYWLSTPALMPMNMAPITGR-----ALEPY 65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CITY: San Diego
STATE: California
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FILING DATE: 11-AU APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NAME: Seidman, Stephanie L. REGISTRATION NUMBER: 33,779
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                TOPOLOGY:
                                                                                                                                                                                                                                                                                                                                                                                           LENGTH:
                                                                                                                                                                                                                                                                                                                                                                                                                                                              TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FILING DATE: 5-NOV-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                          amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Application US/08949386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1660 Union Street
                                                                                                                                                                                                                                                                                                                                                                                             520 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gillespie, Alison
VENTION: HUMAN CALCIUM CHANNEL COMPOSITIONS AND
VENTION: METHODS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            McCue, Ann
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Williams,
           Harpold, Michael
Ellis, Steven
Williams, Mark
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Harpold, Michael
                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ellis, Steven
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Brown, Martin,
                                                                                                                                                                                                                                                                                                                                                                                                                                                               (619)
                                                                                                                                                                                                                                                                                                                                                                                                                                              238-0062
                                                                                                                                                                                                                                                              14.0%;
30.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                               238-0999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              38
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               08/105,536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US/08/290,012
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           08/149,097
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              US/08/949,386
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              33,779
ER: 519808
                                                                                                                                                                                                                                               4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Haller & McClain
                                                                                                                                                                                                                                                                Pred. No. 36;
                                                                                                                                                                                                                                                                              Score 54.5;
                                                                                                                                                                                                                                               Mismatches
                                                                                                                                                                                                                                                                               DB 3; Length 520;
                                                                                                                                                                                                                                               21;
                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                               <u>ن</u>
```

```
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CORRESPONDENCE ADDRESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICANT:
                                                               PRIOR APPLICATION DATA:
APPLICATION NUMBER: 07/482,384
FILING DATE: 02-FEB-1990
                                                                                                                                                                                 PRIOR APPLICATION DATA:
PRIOR APPLICATION UNMBER: 07/620,250
                                                                                                                                                                                                                                                                                                                                 PRIOR APPLICATION DATA:
07/868,354
                                                                                                                                                                                                                                                                                                                                                                                 FILING DATA:
PRIOR APPLICATION DATA:
07/914,231
                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRIOR APPLICATION DATA:
APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRIOR APPLICATION DATA:
                                                 PRIGR APPLICATION DATA:
                                                                                                                                                   PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                      PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                         PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICATION NUMBER: 08/1 FILING DATE: 5-NOV-1993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICATION NUMBER: 08/40
APPLICATION NUMBER: 08/40
APPLICATION NUMBER: 08/40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICATION NUMBER: 08/19
FTI.THG DATE: 07-FEB-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SOFTWARE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COUNTRY:
APPLICATION NUMBER: PCT/
FILING DATE: 04-APR-1989
NIOR APPLICATION DATA:
                                                                                                                  FILING DATE:
                                                                                                                    APPLICATION NUMBER: 07/60 FILING DATE: 08-NOV-1990
                                                                                                                                                                        FILING DATE:
                                                                                                                                                                                                                                                                         FILING DATE:
                                                                                                                                                                                                                                                                                                                          FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICATION NUMBER:
                                                                                                                                                                                                                                        APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                           APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     San Diego
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       California
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1660 Union Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gillespie, Alison
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Feldman,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PatentIn Release #1.0, Version #1.25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Brown, Martin, Haller & McClain
                                                                                                                                                                                                                                                                       NUMBER: PCT/US92/06903
14-AUG-1992
                                                                                                                                                                                                                                                                                                                          10-APR-1992
                                                                                                                                                                                                                      15-AUG-1991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             4-APR-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  7-NOV-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               11-AUG-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 28-SEPT-1994
                                                                                                                                                                       30-NOV-1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            23-SEPT-1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Danie
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        HUMAN CALCIUM CHANNEL COMPOSITIONS AND METHODS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Robert
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 08/314,083
                                                                                                                                                                                                                                                                                                                                                                                                                                           08/105,536
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             08/290,012
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              08/311,363
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          08/193,078
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  08/404,950
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US/08/450,562
                                   PCT/US89/01408
                                                                                                                                     07/603,751
                                                                                                                                                                                                                                          07/745,206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           08/149,097
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           08/223,305
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  08/336,257
```

```
RESULT 14
US-08-976-255-17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; MOLECULE TYPE: protein US-08-450-562-28
; TOPOLOGY: 1; MOLECULE TYPE: US-08-976-255-17
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         sequence 17, Application US/08976255
Patent No. 6136581
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TELEFAX: (619) 238-00 INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          GENERAL INFORMATION:
                                                                                                                  INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                        COMPUTER READABLE FORM:
MEDIUM TYPE: 3.5" Diskette, 1.44 Mb
MEDIUM TYPE: storage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE CHARACTERISTICS:
                                                                                                                                                                TELECOMMUNICATION INFORMATION: TELEPHONE: (213) 489-1600
                                                                                                                                                                                                                                              FILING DATE: NO. 6136581 ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                             CLASSIFICATION: 435
PRIOR APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                            CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Plowman, Gregory TITLE OF INVENTION: KINASE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TELECOMMUNICATION INFORMATION:
                                                                                               SEQUENCE CHARACTERISTICS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NUMBER OF SEQUENCES:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          384 LEDACEHLGEYLEAYWRATHTTSSTPMTPLLGRNLGSTALSPY 426
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICATION NUMBER: 07/1 FILING DATE: 04-APR-1988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  REGISTRATION NUMBER: 33,779
REFERENCE/DOCKET NUMBER: 6362-519812
                                                                                                                                                                                                REGISTRATION NUMBER: 32, REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COUNTRY:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     28 VNDVCNFASRNDYSYWLSTPALMPMNMAPITGR-----ALEPY 65
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    TYPE: amino acid TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TELEPHONE:
                                                                                                                               TELEFAX: (213)
TELEX: 67-3510
                                                                                                                                                                                                                                                               APPLICATION NUMBER: 60/031,675 FILING DATE: No. 6136581ember
                                                                                                                                                                                                                                                                                                                                 FILING DATE:
                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                            SOFTWARE:
                                                                                                                                                                                                                                                                                                                                                                                               OPERATING SYSTEM:
                                                                                                                                                              TELEPHONE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     LENGTH:
                                               STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             90071-2066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Los Angeles
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Seidman,
                                                                                                                                                                                                                                Warburg, Richard
                                                                amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           California
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   520 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         E: Lyon & Lyon
633 West Fifth Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Suite 4700
                                                                              472 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Jono, Keith E
                                                                                                                                                                                                                                                                                                                                                                              SYSTEM: IBM P.C. DOS
FastSEQ for Windows
                                                                                                                                                                                                                                                                                                                                                                                                          IBM Compatible
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     619) 238-0999
                                                                                                                                                                                                                                                                                                                          No.
                 Protein
                                            single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Stephanie L
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    238-0062
                                                                                                                                                  955-0440
                                                                                                                                                                                                                                                                                                                              R: US/08/976,255
6136581ember 21,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          KINASE GENES AND USES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       14.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      07/176,899
                                                                                                                                                                                                                                                                                  60/031,675
                                                                                                                  17:
                                                                                                                                                                                                  229/182
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 54.5;
Pred. No. 36;
                                                                                                                                                                                                                                                                                                                                                                                             DOS 5.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Mismatches
                                                                                                                                                                                                                                                                  22,
                                                                                                                                                                                                                                                                  1996
                                                                                                                                                                                                                                                                                                                                 1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 520;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
```

```
В
                                 Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ş
                                                                                                                                                                       ; MOLECULE TYPE: US-08-895-590-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT 15
US-08-895-590-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         В
                                                                         Query Match 13.7%; Score 53.5; Best Local Similarity 30.2%; Pred. No. 56; Matches 13; Conservative 4; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence 7, Application US/08895590 Patent No. 6207410
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Best Local Similarity
Matches 19; Conserv
                                                                                                                                                                                                                                                                                                       TELEPOOMUNICATION INFORMATION:
TELEPHONE: 703-836-6620
TELEPAX: 703-836-2021
INFORMATION FOR SEQ ID NO: 7:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT: Hall, Linda M.
APPLICANT: Ren, Dejian
APPLICANT: Zheng, Wei
APPLICANT: Dubald, Manuel Marcel Paul
TITLE OF INVENTION: Genes Encoding an Insect Calcium Channel
NUMBER OF SEQUENCES: 101
CORRESPONDENCE ADDRESS:
ADDRESSEE: BURNS, DOANE, SWECKER & MATHIS, LLP
STREET: 699 Prince Street
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                         PRIOR APPLICATION DATA:
APPLICATION NUMBER: US/08/374,888
FILING DATE: 19-JAN-1995
ATTORNEY/AGENT INFORMATION:
NAME: MCGOWAN, MAICOLM M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOTTWARE: Patentin Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/895,590
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ZIP: 22314-3187
COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                               SEQUENCE CHARACTERISTICS:
LENGTH: 574 amino acids
TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         246 MGLE 249
436 LEDACEHLGEYLEAYWRATHTSSSTPMTPLLGRNVGSTALSPY 478
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   190 HPNVLQCLGLCVE---TLPFLLIMEFCQLGDLKRYLRAQRPPEGLS-PELPPRDLRTLQR 245
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STREET: 699 Princ
CITY: Alexandria
STATE: VA
                                 28 VNDVCNFASRNDYSYWLSTPALMPMNMAPITGR-----ALEPY 65
                                                                                                                                                                                                             STRANDEDNESS: sir
TOPOLOGY: linear
                                                                                                                                                                                                                                                                                                                                                                                   REGISTRATION NUMBER: 39,300
REFERENCE/DOCKET NUMBER: 022650-263
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         FILING DATE:
CLASSIFICATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               COUNTRY: USA
ZIP: 22314-3187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             60 RALE 63
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         4 HGQDLGTLGSCLQRFTTMPFL----FCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITG 59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                             single
                                                                                                                                                                                         DNA (genomic)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               13.8%;
29.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 54; DB 4; Length 472; Pred. No. 38;
                                                                         Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mismatches
                                                                                                           DB 4; Length 574;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               28;
                                                                         21;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             8;
                                                                         5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
                                                                         Gaps
                                                                         1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ω,
```

Search completed: April 13, 2001, 15:41:59

Job time: 308 sec

THIS PAGE BLANK (USPTO)

GenCore version 4.5 Copyright (c) 1993 - 2000 Compugen Ltd

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Post-processing:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            OM protein - protein search, using sw model
                                                                                                                                                                                                                                                                                                                               Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                       Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        seq
                                                                                                                                        390
390
                                                                                                                                                                            390
390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              length:
  100.0
100.0
100.0
100.0
100.0
100.0
100.0
95.1
95.1
94.6
82.3
                                                                                                                                                                                                                                     Match
                                                                                                                                                                                                                                                                                                                                                                                                              10:
11:
13:
13:
14:
15:
16:
17:
18:
19:
20:
21:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                       Query
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US-09-543-371-10_COPY_54_124
390
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A_Geneseq_0401:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     390729 segs, 57163235 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BLOSUM62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  April 13, 2001, 15:41:17; Search time 49.95 Seconds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QRAHGQDLGTLGSCLQRFTT.....MNMAPITGRALEPYISRCTV 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           \(\subset{SIDS1/gcgdata/geneseq/geneseqp/AA1986.DAT:*} \(\subset{SIDS1/gcgdata/geneseq/geneseqp/AA1987.DAT:*} \(\subset{SIDS1/gcgdata/geneseq/geneseqp/AA1989.DAT:*} \(\subset{SIDS1/gcgdata/geneseq/geneseqp/AA1989.DAT:*} \)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /SIDS1/gcgdata/geneseq/geneseqp/AA1981.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1982.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        /SIDS1/gcgdata/geneseq/geneseqp/AA1980.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         /SIDS1/gcgdata/geneseq/geneseqp/AA1984.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1985.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                               /SIDSI/gcgdata/geneseq/geneseqp/AA1997.DAT:*
/SIDSI/gcgdata/geneseq/geneseqp/AA1998.DAT:*
/SIDSI/gcgdata/geneseq/geneseqp/AA1999.DAT:*
/SIDSI/gcgdata/geneseq/geneseqp/AA2000.DAT:*
/SIDSI/gcgdata/geneseq/geneseqp/AA2001.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /SIDS1/gcgdata/geneseq/geneseqp/AA1983.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    /SIDS1/gcgdata/geneseg/genesegp/AA1995.DAT:*
/SIDS1/gcgdata/geneseg/genesegp/AA1996.DAT:*
/SIDS1/gcgdata/geneseg/genesegp/AA1997.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              /SIDS1/gcgdata/geneseq/geneseqp/AA1991.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1992.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1993.DAT:*
/SIDS1/gcgdata/geneseq/geneseqp/AA1994.DAT:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /SIDS1/gcgdata/geneseq/geneseqp/AA1990.DAT:*
                                                                                                                                                                                                                                       Length
                                                          268
268
471
                                                                                                                                                                                                                                       DB
                                                                                                                                                                                                                                       Ħ
                                                                                                                                                        Y95918
R79164
Y44172
                                                                                  Y97555
                                                                                                                                                                                                                                                                                               SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              81.253 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (without alignments
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   390729
                                                                        Human alpha3 type
Human type IV coll
Type IV collagen N
Human alpha3(IV)NC
Bovine type IV col
Bovine alpha3 type
Partial sequence o
Human type IV coll
                                                                                                                                                                                                                                   Description
                                                                                                                                                      Partial sequence o Human type IV coll
                                                                                                                                  Human type IV
Human alpha3
                                                                                                                                                                                            Human Goodpasture
```

1		44	43	42	41	40	39	38	37	36	<u>ა</u>	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12
,	55	55	55	55	5.	56.5	56.5	57	57.5	58	59	60	60	60	62.5	63	144	222	222	235	235	242	242	242	242	314	314	314	314	314	315	321	321	321
			-	•	•		14.5	•	•	•	•	15.4	15.4		•	•	•	•	•	•	60.3		•	•	•		•	•	•	•	•	•	82.3	•
	300	300	271	271	174	5532	256	397	550	1445	160	2518	1495	186	252	628	1694	260	260	260	260	430	258	258	242	772	772	309	264	264	229	406	260	260
	21	21	21	21	18	21	17	16	20	20	13	21	18	19	17	13	19	21	20	21	20	21	21	20	21	18	13	21	21	20	10	21	21	20
	J	1 13	~1	t n	W11722	~1	R95250	~1	W94922	W93595	R27887	B40574	W18226	W57884	R95251	R27575	W40109	Y97556	Y31994	Y97558	Y31996	B58180	Y97554	Y31992	Y67946	W09643	R23873	B54044	Y97557	9	P93524	58	Y97553	Y31991
			Arabidopsis thalia	Arabidopsis thalia	H-Delta-1 polypept	Ľ.	mismatch repa	Urea transporter p	Rat pheromone rece	_	Pheromone receptor		Transcriptional co	Human GTP-binding	DNA mismatch repai	ABF-A from A. nige	Human alpha-6(IV)	۰	Type IV collagen N	-	IV collagen	Lung cancer associ	=	Цa	Human type IV coll	Human type IV coll	Human alpha 5 (IV)	Human pancreatic c	₽	VIV	-	a	an alpha1(ĭv)N	Type IV collagen N

ALIGNMENTS

RESULT Y95918

```
Novel Goodpasture antigen binding proteins useful for diagnosing and treating autoimmune disorders, tumor, and preventing cell apoptosis
                              WPI; 2000-572094/53
N-PSDB; A50367.
                                                                                                       24-FEB-2000; 2000WO-IB00324.
                                                       Saus J;
                                                                        (SAUS/) SAUS J.
                                                                                        24-FEB-1999;
                                                                                                                        31-AUG-2000.
                                                                                                                                        WO200050607-A2
                                                                                                                                                       Homo sapiens.
                                                                                                                                                                        therapy
                                                                                        99US-0121483
```

Goodpasture antigen; GPDeltaV; goodpasture antigen binding protein; GPBP; human; autoimmune disease; apoptosis; cancer; tumour;

Human Goodpasture antigen DeltaV.

20-NOV-2000 (first entry)

Y95918;

Y95918 standard; Protein; 211

A

Claim 36; Page 151-152; 158pp; English.

```
RESULT
R79164
             뫄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QΨ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            The present sequence is that of human recombinant Goodpasture antigen (GP) DeltaW, i.e. an alternative form of human GP resulting from splicing out of exon v. The recombinant protein, lacking the Met-1 residue, was expressed in bacterial pellets using modified vector pETISb carrying GPDeltaV cDNA (see A50367). The invention relates to novel Goodpasture antigen binding proteins (GPDPs, see Y95900-11), which bind to and phosphorylate the unique N-terminal region of human GP, and which are highly expressed in several autoimmune conditions. Claimed methods for treating an autoimmune disorder, cell apoptosis or a tumour involve modifying the expression or activity of GPDPP, especially using a GP-derived content.
residue bovine alpha 3 (IV) collagen protein sequence, a 68 bp bovine genomic fragment was amplified. This fragment was then used to a bovine lens cDNA library and a 1.5 kb partial cDNA clone was obtd. (clone KMC15). This encodes 238 residues of the triple helicately collagenous domain and all 233 residues of the C-terminal non-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  R79164 standard; Protein; 218 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               peptide, such as GPDeltaV.
                                                                                                                                        Using the PCR with primers derived from each end of the known
                                                                                                                                                                                                                                                                      cDNAs encoding human useful for detection
                                                                                                                                                                                                                                                                                                                                                                              WPI; 1995-262631/34
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (UNIV )
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  30-NOV-1990;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US5424408-A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Type IV collagen; alpha 3 chain; Alport syndrome;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Partial sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                22-DEC-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (UYYA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 30-NOV-1990;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    13-JUN-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                114 alepyisrctv 124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     54
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Match Concer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ب
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ALEPYISRCTV 71
                                                                                                                                                                                                                                                                                                                                                                                                                                  BG,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              UNIV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      UNIV
                                                                                                                                                                                                                                                                                                                                                     Q96291
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             211
                                                                                                                                                                                                                                                                                                                                                                                                                                  Morrison
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                            Columns
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           KANSAS MEDICAL CENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  90US-0621091
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   90US-0621091
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               of human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   100
                                                                                                                                                                                            7-10;
                                                                                                                                                                                                                                                                   or bovine alpha-3 type 4 collagen peptide(s) and therapeutic removal of antibodies associated the statement of the statement 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   .0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            alpha 3 chain of type IV collagen.
                                                                                                                                                                                       33pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 390; DB 21;
Pred. No. 2.6e-43;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                                                                                                         English
                                                                                                                                                                                                                                                                                                                                                                                                                                  ST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COL4A3 gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length
                                triple helical
                                                                                                                                                                                                                                                                         associated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                        27
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
```

```
RESULT
Y44172
ID Y4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Qγ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Db
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Qy
Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            collagenous (NC1) domain of the alpha 3 (IV) chain. This bovine CDNA clone was used to screen a human kidney cDNA library and a 2.7 kb human cDNA clone (clone KMC27) was obtd. This clone encodes 218 residues of the NC1 domain and a portion of the 3' UTR region of the human alpha 3(IV) chain. The COL4A3 gene localises to chromosome 2 and therefore mutations in COL4A3 cannot be responsible for Alport syndrome which is X-linked. An isolated and substantially pure nt. having the sequence in Q96291 is claimed.
                          also
                                  collagen polypeptide. The sequence corresponds to the 218 amino acids of the C-terminal non-collagenous domain. Alpha3 chain collagen polypeptides are useful for detecting Goodpasture antibodies in blood or tissue from a human patient and for treating Goodpasture syndrome, especially by neutralising the antibodies in the blood. The polypeptides
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              01-FEB-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Y44172;
                                                                                                                                     Claim
                                                                                                                                                               diagnosis
                                                                                                                                                                                                           N-PSDB;
                                                                                                                                                                                                                                                                          (UYYA ) UNIV YALE. (UNIV ) UNIV KANSAS MEDICAL CENT
                                                                                                                                                                                                                                                                                                                                               07-MAR-1995;
                                                                                                                                                                                                                                                                                                                                                                           26-OCT-1999
                                                                                                                                                                                                                                                                                                                                                                                                                               Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Goodpasture syndrome;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Recombinant;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Human type IV collagen alpha3 chain protein.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Y44172
                                                                                                        This sequence represents a recombinant human alpha3 chain of
                                                                                                                                                               Isolated alpha 3 chain of type IV collagen polypeptide useful for diagnosis and treatment of Goodpasture syndrome {	extstyle -}
                                                                                                                                                                                                                        WPI; 1999-610317/52
                                                                                                                                                                                                                                                    Hudson
                                                                                                                                                                                                                                                                                                                     30-NOV-1990;
                                                                                                                                                                                                                                                                                                                                                                                                     US5973120-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ALEPYISRCTV 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         grahgqdlgtlgsclqrfttmpflfcnvndvcnfasrndysywlstpalmpmnmapitgr 87
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        alepyisrctv 98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60
                                                                                                                                     2; Column
                                                                                                                                                                                                                                                    BG,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  standard; Protein; 218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                          Z28775
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     218 AA;
                                                                                                                                                                                                                                                    Reeders
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                        nephrotrophic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        bovine; alpha3 chain;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (first entry)
                                                                                                                                                                                                                                                                                                                     90US-0621091
                                                                                                                                                                                                                                                                                                                                               95US-0399889
                                                                                                                                       35-36;
                                                                                                                                                                                                                                                    ST,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                        antibody; blood;
                                                                                                                                    27pp; English
                                                                                                                                                                                                                                                  Morrison KE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 390; DB 16;
Pred. No. 2.7e-43;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        type
                                                                                                                                                                                                                                                                                                                                                                                                                                                            tissue; human;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        IV collagen;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        detection;
                                                                                                                                                                                                                                                                                                                                                                                                                                                           nephrotrophism
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                             type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                              ۷I
```

Sequence

```
멍
                  δÃ
                                         망
                                                             Š
                                                                                                                                   88888888888888
                                                                                                                                                                                                                                             RESULT
Y56784
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  XXX
                                                                                           Query Match
Best Local
                                                                                 Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Best
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query: Match
                                                                                                                                                  represents the carboxy terminal noncollagenous domain of the human alpha3 chain of type IV collagen.
                                                                                                                                                                        The invention provides a method of detecting Goodpasture antibodies in the fluid of a patient by contacting it with a peptide comprising; most 218 amino acids of the human alpha3 chain type IV collagen that contains the fragment shown in Y56785. The methods are useful for the diagnosis and treatment of Goodpasture syndrome. The present sequence
                                                                                                                                                                                                                                        Disclosure; Columns 23-26; 26pp; English.
                                                                                                                                                                                                                                                                                                                                                                                30-NOV-1990;
07-MAR-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                       US6007980-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         27-MAR-2000
                                                                                                                                   Sequence
                                                                                                                                                                                                                                                             Diagnosing and treating Goodpasture syndrome using a peptide derived from type {\bf IV} collagen -
                                                                                                                                                                                                                                                                                            WPI; 2000-096371/08
N-PSDB; Z46729.
                                                                                                                                                                                                                                                                                                                             Hudson
                                                                                                                                                                                                                                                                                                                                               (UNIV)
                                                                                                                                                                                                                                                                                                                                                                                                              07-OCT-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                   28-DEC-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Goodpasture syndrome; type IV collagen; alpha3 chain; human.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Human alpha3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Y56784 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Homo sapiens
 88
                    61
                                         28
                                                                                          Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     88
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local
                                                             \mathbf{L}
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ۳
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      4
                                      alepyisrctv 98
                    ALEPYISRCTV 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    alepyisrctv 98
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ALEPYISRCTV 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QRAHGQDLGTLGSCLQRETTMFFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            qrahgqdlgtlgsclqrfttmpflfcnvndvcnfasrndysywlstpalmpmnmapitgr 87
                                                                                                                                                                                                                                                                                                                            BG,
                                                                                                                                                                                                                                                                                                                                                VIND
                                                                               Similarity 100.0%; 71; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                   218
                                                                                                                                                                                                                                                                                                                             Reeders
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                KANSAS MEDICAL CENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    type IV collagen C-terminal domain
                                                                                                                                   Ā
                                                                                                                                                                                                                                                                                                                                                                               90US-0621091
95US-0399889
                                                                                                                                                                                                                                                                                                                                                                                                              98US-0167364.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 .0%;
                                                                                                                                                                                                                                                                                                                             Morrison
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  218
                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0,
                                                                               Score 390; DB 21;
Pred. No. 2.7e-43;
; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 390; DB 20;
Pred. No. 2.7e-43;
Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ₽
                                                                                                   Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         218;
                                                                                                     218;
                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0;
                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0
```

```
Query Match
Best Local Similarity
Matches 71; Conserv
                                                                                                                                                                                                                                                                especially for treating diseases chosen from angiogenesis dependent cancers, benign tumours, rheumatoid arthritis, diabetic retinopathy, psoriasis, ocular angiogenesis diseases, Oslar-Webber Syndrome, myocardial angiogenesis, plaque neovascularisation, telangiectasia, haemophiliac joints, angiofibroma, wound granulation, intestinal adhesions, atherosclerosis, scleroderma, hypertrophic scars, cat scratch
                                                                                                                                                                                                                                                                                                                                                                           The present invention describes an isolated protein chosen from the N domain of the alpha 1, alpha 2 or alpha 3 chains of type IV collagen a fragment analogue, derivative or mutant, which has anti-angiogenic properties. The anti-angiogenic proteins, multimers and chimeras are
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Anti-angiogenic proteins comprising the NC1 domain of the alpha 1, 2 3 chain of Type IV collagen used in, e.g. treatment of benign tumors and rheumatoid arthritis - \,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           benign tumour; rheumatoid arthritis; diabetic retinopathy; psoriasis; ocular angiogenesis disease; Osler-Webber Syndrome; telangiectasia; myocardial angiogenesis; plaque neovascularisation; angiofibroma;
                                                                                                                                                                                                                                                                                                                                                                                                                              The present sequence represents the human type IV collagen The present invention describes an isolated protein chosen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Human type IV collagen alpha 3 chain protein
                                                                                                                                                                       Sequence
                                                                                                                                                                                                                     inhibit a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Claim 32;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       17-JUN-1998;
25-MAR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       17-JUN-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   WO9965940-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                contraception;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  atherosclerosis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            03-APR-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Y67942;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Y67942 standard; Protein; 245
                                                                                                                                                                                                                                                 disease, Helicobacter pylori ulcers, dialysis graft vascular access
                                                                                                                                                                                                                                                                                                                                                                useful for inhibiting angiogenic activity in mammalian tissue,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Kalluri
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      23-DEC-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Human;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (BETH-) BETH
61
                             55
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        U
                                                                                                                                                                                                     osis, contraception and obesity. The compositions can be used bit a disease characterised by angiogenic activity, in conjunc radiation therapy, chemotherapy or immunotherapy.
                                              QRAHGQDLGTLGSCLQRFTTMFFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60
 ALEPYISRCTV
                             qrahgqdlgtlgsclqrfttmpflfcnvndvcnfasrndysywlstpalmpmnmapitgr 114
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           2000-097708/08
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Fig 16B; 117pp; English.
                                                                                                                                                                         245
                                                                                        100.0%; ilarity 100.0%; Conservative 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ٧I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ISRAEL DEACONESS MEDICAL CENT.
                                                                                                                                                                         AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  obesity.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              collagen;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     98US-0089689
99US-0126175
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       99WO-US13737
 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               scleroderma; hypertrophic scar; cat scratch disease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            anti-angiogenic;
                                                                                            0;
                                                                                        Score 390; DB 21;
Pred. No. 3.1e-43;
; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            angiogenesis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             sequence
                                                                                            Indels
                                                                                                                        Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              cancer;
                                                                                                                           245;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ID NO:10
                                                                                                                                                                                                                                                                                                                                                                                                                                               alpha 3 chain
                                                                                                                                                                                                                                                                                                                                                                                                                                  from the NC1
                                                                                            0,
                                                                                            Gaps
                                                                                                                                                                                                                                    ç
                                                                                                                                                                                                                                                                                                                                                                                                               or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ဝူ
                                                                                            0;
```

Qy Дb Qy

DЬ

115

alepyisrctv

σ

```
A lipid degeneration; chemical burn; ulcer; herpes simplex infection; (W Herpes zoster infection; protozoan infection; Kaposi's sarcoma; (W Mooren ulcer; Terrien's marginal degeneration; Chemical burn; ulcer, herpes simplex infection; (W Mooren ulcer; Terrien's marginal degeneration; polyarteritis; Krauma; systemic lupus; polyarteritis; (W marginal keratolysis; scleritis; Steven's Johnson disease; (W radial keratotomy; sickle cell anaemia; sarcoid; (W pseudoxanthoma elasticum; paget's disease; vein occlusion; (W artery occlusion; carotid obstructive disease; chronic uveitis; (W artery occlusion; carotid obstructive disease; Bechets disease; W myopla; optic pit; Stargart's disease; pars planitis; (W myopla; optic pit; Stargart's disease; pars planitis; (W obronic retinal detachment; hyperviscosity syndrome; toxoplasmosis; (W baemangloma; Osler-Weber-Rendu; AIDS; ocular neovascular disease; (W osteoarthritis; chronic inflammation; Crohn's disease; (M osteoarthritis); (M osteoarthritis)
                                                                                                    Inhibition of angiogenesis with non-collagenous alpha chain monomer useful for treating e.g. tumor growth or metastasis, necgrascularisation, etc
                                                                                                                                                                                                                                                                                                                                                                                 27-MAR-1998;
29-OCT-1998;
This sequence represents a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 superior limbic keratitis; pterygium keratitis sicca; sogrens; acne rosacea; phylectenulosis; syphilis; Mycobacteria infection;
                                                   Disclosure; Fig 17c;
                                                                                                                                                                                                         N-PSDB;
                                                                                                                                                                                                                                WPI; 1999-601297/51
                                                                                                                                                                                                                                                                                                                                                                                                                                                          26-MAR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           07-OCT-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WO9949885-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Synthetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       vitamin A deficiency; contact lens overwear; atopic keratitis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    corneal graft rejection; neovascular glaucoma; retrolental fibroplasia; epidemic keratoconjunctivitis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             corneal neovascularization; retinopathy of prematurity;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         choroidal neovascularization; macular degeneration;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Type IV collagen; NC1 angiogenesis; tumour;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Type IV collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 05-JAN-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Y31993;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Y31993 standard; Protein; 268 AA
                                                                                                                                                                                                                                                                                                                              (UNIV ) UNIV KANSAS MEDICAL CENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ulceritive colitis; psoriasis; atherosclerosis; pemphigoid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           angiogenesis; tumour; metastasis; therapy; diabet rheumatoid arthritis; retinal neovascularization;
                                                                                                                                                                                                                                                                                  BG,
                                                                                                                                                                                                         Z20091
                                                                                                                                                                                                                                                                                  Sarras MP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (first entry)
                                                                                                                                                                                                                                                                                                                                                                               98US-0079783.
98US-0106170.
                                                                                                                                                                                                                                                                                                                                                                                                                                                          99WO-US06445
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  /note=
18..268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           /note= "NC1 alpha-3 monomer"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          /note=
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       /note= "affinity tag"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    . 268
                                                   56pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                domain alpha-3 monomer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            domain; non-collagenous domain; human;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      "BM40 signal peptide"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        "mature protein"
  recombinant type IV collagen
                                                      English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   diabetic retinopathy;
```

```
XTXXX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Дb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RESULT
                                                                                                                                                                                                                                                                                                                                                                                                        Y97555
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              polynucleotides and polypeptides are used to treat an angiogenesis-
mediated disorder or condition, especially selected from solid and
blood-borne tumours, diabetic retinopathy, rheumatoid arthritis,
retinal neovascularization, choroidal neovascularization, macular
degeneration, corneal neovascularization, retinopathy of prematurity,
corneal graft rejection, neovascular glaucoma, retrolental
fibroplasia, epidemic keratoconjunctivitis, vitamin A deficiency,
contact lens overwear, atopic keratitis, superior limbic keratitis,
pterygium keratitis sicca, sogrens, acne rosacea, phylectenulosis,
syphilis, mycobacteria infections, lipid degeneration, chemical
burns, bacterial ulcers, fungal ulcers, herpes simplex infections,
                                     tumour growth; integrin receptor; carcinoma; sarcoma; rhabdomyosarcoma; retinoblastoma; Ewing sarcoma; neuroblastoma; osteosarcoma; leukaemia; diabetic retinopathy; rheumatoid arthritis; neovascularisation; muscular degeneration; corneal graft rejection; vitamin A deficiency; atopic keratitis; Mycobacteria infection; chemical burn; sarcoid; Kaposi's sarcoma; sickle cell anaemia; carotid obstructive disease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   herpes zoster infections, protozoan infections, Raposi's sarcoma, Mooren ulcer, Terrien's marginal degeneration, marginal keratolysis, trauma, systemic lupus, polyarteritis, Wegener's sarcoidosis, scleritis, Steven's Johnson disease, radial keratotomy, sickle cell anaemia, sarcoid, pseudoxanthoma elasticum, Pagets disease, vein occlusion, artery occlusion, carotid obstructive disease, Chronic uveitis, Ohronic viritis, Lyme's disease, Bales disease, Bechets disease, myopia, optic pits, Stargarts disease, pars planitis, chronic retinal detachment, hyperviscosity syndromes, toxoplasmosis, cohronic retinal detachment, hyperviscosity syndromes, toxoplasmosis,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       methods and kits for inhibiting angiogenesis, tumour growth and metastasis, and endothelial cell interaction with the extracellular matrix, each method comprising contacting the tumour or animal tissue with 1 or more isolated type IV collagen NC1 alpha chain monomer(s) selected from the group consisting of alpha-1, alpha-2, alpha-3 and alpha-6 NC1 chain monomers (see Y31991-96). The
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             facilitate protein secretion, and a mature protein comprising an affinity tag (facilitates purification and identification of the material) and the alpha-1 chain monomer. The invention provides
              chronic inflammation; psoriasis; therapy; alpha3(IV)NC1
                                                                                                                                                                                 Type IV collagen alpha chain monomer; human;
                                                                                                                                                                                                                                   Human alpha3(IV)NC1 protein sequence.
                                                                                                                                                                                                                                                                                                                                   Y97555;
                                                                                                                                                                                                                                                                                                                                                                             Y97555 standard; Protein; 268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     tissue, haemangiomas, Osler-Weber-Rendu, AIDS, ocular neovascular disease, osteoarthritis, chronic inflammation, Crohn's disease,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  post-laser complications, abnormal proliferation of fibrovascular
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 monomers can be produced via recombinant protein expression.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       non-collagenous (NC1) domain alpha-3 polypeptide composed of a BM40 signal sequence (which is cleaved from the mature protein) to
                                                                                                                                                                                                                                                                                  12-FEB-2001 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ulceritive colitis,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                61 ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               78
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1 QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60
                                                                                                                                                                                                                                                                                                                                                                                                                               7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            alepyisrctv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          grahgqdlgtlgsclqrfttmpflfcnvndvcnfasrndysywlstpalmpmnmapitgr 137
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            268
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 148
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 psoriasis,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 390; DB 20;
Pred. No. 3.4e-43;
Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                ΑA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 atherosclerosis,
                                                                                                                                                                                 inhibitor;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               and pemphigoid (all
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Indels
                                                                                                                                                                                    angiogenesis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        The
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
```

Homo sapiens.

```
RESULT
Y44171
ID
                                                                                                                                                                                                                                                                            Š
                                                                                                                                                                                                                                                                                                               망
                                                                                                                                                                                                                                                                                                                                                                                                                                                       В
                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
                                                                                                                                                                                                                                                                                                                                                                         tches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               neuroblastoma, osteosarcoma or leukaemia). These are also applicable to treating non-tumourigenic diseases and conditions with accompanying undesired angiogenesis, e.g. diabetic retinopathy, rheumatoid arthritis, retinal neovascularisation, choroidal neovascularisation, muscular
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            cell interaction with the extracellular matrix. The antagonists are also useful for treating diseases and conditions with accompanying undesired angiogenesis, e.g. solid and blood-borne tumours (e.g. melanomas,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           cells or tissue with a polypeptide composition containing antagonists of specific integrin receptors. The methods and the antagonists are useful for inhibiting angiogenesis, tumour growth or metastases, or endothelial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Use of antagonists of specific integrin receptors for inhibiting anglogenesis, tumour growth or metastases, or endothelial cell interactions with the extracellular matrix
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                degeneration, corneal graft rejection, vitamin A deficiency, atopic keratitis, Mycobacteria infections, chemical burns, Kaposi's sarcoma, sickle cell anaemia, sarcoid, carotid obstructive disease, post-laser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      This sequence is a human type IV collagen alpha chain monomer, designated alpha3(IV)NC1. The invention relates to a method for inhibiting angiogenesis, tumour growth or metastases, or endothelial cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WO200059532-A1
Bos taurus
                                                                                                         01-FEB-2000
                                                                                                                                                                      Y44171 standard; Protein; 471
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   complications, chronic inflammation or psoriasis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             carcinomas, sarcomas, rhabdomyosarcoma, retinoblastoma, Ewing sarcoma,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Disclosure; Fig 17c; 78pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Brooks P, Hudson B;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             31-MAR-2000; 2000WO-US08678
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            12-OCT-2000
                                           Recombinant;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  N-PSDB; A90993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (BIOS-) BIOSTRATUM INC.
                                                                                                                                                                                                                                                  138
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          interactions with the extracellular matrix, comprising contacting
                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                             78
                                                                                                                                                                                                                                                                                                                                                                                        Local
                                                                                                                                                                                                                                                                                                          æ
                                                                                                                                                                                                                                                  alepyisrctv 148
                                                                                                                                                                                                                                                                              ALEPYISRCTV 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2000-664962/64.
                                                                                                                                                                                                                                                                                                                                                                         l Similarity
71; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                       268
                                                                         IV collagen alpha3 chain protein.
                           syndrome;
                                                                                                                                                                                                                                                                                                                                                                         Conservative
                           bovine; alpha3 chain; type IV collagen; (
syndrome; antibody; blood; tissue; human;
                                                                                                        (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                       AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              99US-0127391.
                                                                                                                                                                                                                                                                                                                                                                                      100.0%;
                                                                                                                                                                                                                                                                                                                                                                           0
                                                                                                                                                                                                                                                                                                                                                                        Score 390; DB 21;
Pred. No. 3.4e-43;
Mismatches 0;
                                                                                                                                                                      æ
                                                                                                                                                                                                                                                                                                                                                                                                       Length
                                                                                                                                                                                                                                                                                                                                                                           Indels
                                          detection;
                           nephrotrophism
                                                                                                                                                                                                                                                                                                                                                                         0;
                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                         0;
```

```
RESULT
Y56783
                                                                                                                                                                                                                                                                                                                                                    В
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Вþ
                                                                                                                                                                                                                                                                                                                              Qy
                                                                                                                                                                                                                                                                                                                                                                       Qy
                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    This sequence represents a recombinant bovine alpha3 chain of type IV collagen polypeptide. The sequence corresponds to the 238 amino acids of the C-terminal end of the triple helical domain and all 233 amino acids of the C-terminal non-collagenous domain. Alpha3 chain collagen polypeptides are useful for detecting Goodpasture antibodies in blood or tissue from a human patient and for treating Goodpasture syndrome, especially by neutralising the antibodies in the blood. The polypeptides
                                                                         07-OCT-1998;
                                                                                                                   US6007980-A
                                                                                                                                            Bos
                                                                                                                                                              Goodpasture syndrome; type IV collagen; alpha3 chain; bovine.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           also have a nephrotrophic activity.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Claim 1; Column 31-34; 27pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Isolated alpha 3 chain of type IV collagen polypeptide diagnosis and treatment of Goodpasture syndrome -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Hudson BG, Reeders
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         US5973120-A.
        (UNIV ) UNIV KANSAS MEDICAL CENT (UYYA ) UNIV YALE.
                                          07-MAR-1995;
                                                                                               28-DEC-1999
                                                                                                                                                                                    Bovine alpha3 type IV collagen
                                                                                                                                                                                                          27-MAR-2000
                                                                                                                                                                                                                                                    Y56783 standard; Protein; 471 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           WPI; 1999-610317/52
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (UYYA ) UNIV YALE.
(UNIV ) UNIV KANSAS MEDICAL CENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       30-NOV-1990;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             07-MAR-1995;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   26-OCT-1999
                                                   30-NOV-1990;
                                                                                                                                                                                                                                                                                                                                                  341 alepyisrctv 351
                                                                                                                                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                         9
                                                                                                                                                                                                                                                                                                                   ALEPYISRCTV 71
                                                                                                                                                                                                                                                                                                                                                                                             Similarity 91.5
65; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Z28774
                                                                                                                                                                                                                                                                                                                                                                                                                                                      471 AA;
                                                                                                                                                                                                          (first entry)
                                        90US-0621091.
95US-0399889.
                                                                         98US-0167364
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        90US-0621091
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             9505-0399889
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ST,
                                                                                                                                                                                                                                                                                                                                                                                                         95.1%;
91.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Morrison KE;
                                                                                                                                                                                                                                                                                                                                                                                               6
                                                                                                                                                                                                                                                                                                                                                                                               Score 371; DB 20;
Pred. No. 2.1e-40;
6; Mismatches 0
                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                     Length
                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            useful for
                                                                                                                                                                                                                                                                                                                                                                                               0,
                                                                                                                                                                                                                                                                                                                                                                                               Gaps
```

0;

0;

```
RESULT
R79163
 밁
                                                                                                                                                                                                                                                                                                                                                                QΥ
                                                                                                                                                                                                                                                                                                                                                                                  B
                                                                                                                                                                                                                                                                                                                                                                                                δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                                                                                                                                           ery Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        The invention provides a method of detecting Goodpasture antibodies in the fluid of a patient by contacting it with a peptide comprising imost 218 amino acids of the human alpha3 chain type IV collagen that contains the fragment shown in Y56785. The methods are useful for the diagnosis and treatment of Goodpasture syndrome. The present sequence represents the bovine alpha3 chain of type IV collagen.
Using the PCR with primers derived from each end of the residue bovine alpha 3 (IV) collagen protein sequence, a bovine genomic fragment was amplified. This fragment was to a bovine lens cDNA library and a 1.5 kb partial cDNA
                                                                                                                                (UNIV)
                                                                                                                                                                                                                                                                                                          R79163 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Diagnosing and treating Goodpasture syndrome using a peptide derived from type IV collagen
                                         Disclosure;
                                                         with Goodpasture
                                                                        cDNAs encoding human
                                                                                                                                                         30-NOV-1990;
                                                                                                                                                                         30-NOV-1990;
                                                                                                                                                                                         13-JUN-1995
                                                                                                                                                                                                          US5424408-A
                                                                                                                                                                                                                                          Type IV collagen; alpha 3 chain
                                                                                                                                                                                                                                                         Partial sequence of bovine alpha
                                                                                                                                                                                                                                                                          22-DEC-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Disclosure;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Hudson
                                                                                                                                                                                                                                                                                                                                                   341
                                                                                                                                                                                                                                                                                                                                                                                  281
                                                                                                                                                                                                                                                                                                                          10
                                                                                                                                                                                                                                                                                                                                                                 61 ALEPYISRCTV
                                                                                                                                                                                                                         taurus.
                                                                                                                                                                                                                                                                                                                                                                                                 QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR
                                                                                                1995-262631/34
                                                                                                                                                                                                                                                                                                                                                 alepyisrctv
                                                                                                                                                                                                                                                                                                                                                                                 eqahqqdlgtlgsclqrfttmpflfcnindvcnfasrndysywlstpamipmdmapitgr 340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2000-096371/08
DB; 246728.
                                                                                                                                                                                                                                                                                                                                                                                                                  65;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BG,
                                                                 for detection
                                                                                                                                 VIND
                                                                                         Q96290.
                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                          471 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Columns 19-24; 26pp; English.
                                         Columns
                                                                                                                 Morrison
                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Reeders
                                                                                                                                                                                                                                                                         (first entry)
                                                                                                                                 KANSAS MEDICAL CENT
YALE.
                                                                                                                                                         90US-0621091
                                                                                                                                                                         90US-0621091
                                                                                                                                                                                                                                                                                                                                                                 71
                                                                                                                                                                                                                                                                                                                                                   351
                                                        syndrome
                                                                                                                                                                                                                                                                                                          Protein;
                                         5-8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ST,
                                                                                                                                                                                                                                                                                                                                                                                                                        95.1%;
91.5%;
                                                                or bovine alpha-3 type 4 collagen peptide(s) - and therapeutic removal of antibodies associated
                                                                                                                 ΚE,
                                        33pp;
                                                                                                                                                                                                                                                                                                          471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Morrison
                                                                                                                 Reeders
                                                                                                                                                                                                                                                                                                                                                                                                                  σ,
                                                                                                                                                                                                                                                                                                                                                                                                                         Score 371; DB 21; Pred. No. 2.1e-40;
                                         English
                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches
                                                                                                                                                                                                                                                         3 chain
                                                                                                                 ST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KΕ
                                                                                                                                                                                                                                                         of type
ach end of the known 2
ein sequence, a 68 bp
is fragment was then u
b partial cDNA clone w
                                                                                                                                                                                                                                                                                                                                                                                                                                  21;
                                                                                                                                                                                                                                                                                                                                                                                                                  0
                                                                                                                                                                                                                                                          ٧I
                                                                                                                                                                                                                                                                                                                                                                                                                                Length
                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                         collagen.
                                                                                                                                                                                                                                                                                                                                                                                                                0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         en that for the
                        27 AA
                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          at
                                                                                                                                                                                                                                                                                                                                                                                                                 0
 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         QY
```

```
RESULT
Y67943
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Human; type IV collagen; anti-angiogenic; angiogenesis; cancer; benign tumour; rheumatoid arthritis; diabetic retinopathy; psoriasi. ocular angiogenesis disease; Osler-Webber Syndrome; telangiectasia; myocardial angiogenesis; plaque neovascularisation; angiofibroma; atherosclerosis; scleroderma; hypertrophic scar; cat scratch Aleccontracenties.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         obtd. (clone KMC15). This encodes 238 residues of the triple helical collagenous domain and all 233 residues of the C-terminal non-collagenous (NC1) domain of the alpha 3 (IV) chain. An isolated and substantially pure nt. having the sequence in Q96290 is claimed.
                                                                                   a fragment, analogue, derivative or mutant, which has anti-angiogenic properties. The anti-angiogenic proteins, multimers and chimeras are useful for inhibiting angiogenic activity in mammalian tissue, especially for treating diseases chosen from angiogenisis-dependent
                                                                                                                                                                                                                                                                                                                               Anti-angiogenic proteins comprising the NC1 domain of the alpha 1, 3 chain of Type IV collagen used in, e.g. treatment of benign tumo and rheumatoid arthritis -
              cancers, benign tumours, rheumatoid arthritis, diabetic retinopathy, psoriasis, ocular angiogenesis diseases, Osler-Webber Syndrome, myocardial angiogenesis, plaque neovascularisation, telangiectasia,
                                                                                                                                                                                 The present sequence represents the human type IV collagen alpha 1 chain The present invention describes an isolated protein chosen from the NC1 domain of the alpha 1, alpha 2 or alpha 3 chains of type IV collagen or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               17-JUN-1998;
25-MAR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Y67943;
  haemophiliac
                                                                                                                                                                                                                                                                                   Example
                                                                                                                                                                                                                                                                                                                                                                                                                                                   WPI; 2000-097708/08
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Kalluri
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     23 - DEC - 1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  WO9965940-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Homo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          contraception;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Human type IV collagen alpha 1 chain protein sequence SEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            03-APR-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Y67943
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (BETH-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               341
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   281 eqahqqdlgtlgsclqrfttmpflfcnindvcnfasrndysywlstpamipmdmapitgr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61 ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     11
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        amepyisrctv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QRAHGQDLGTLGSCLQRETTMFFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   BETH
                                                                                                                                                                                                                                                                                                                                                                                                                               Z57159
                                                                                                                                                                                                                                                                                 Fig
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    471 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ISRAEL DEACONESS MEDICAL CENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         (first entry)
                                                                                                                                                                                                                                                                                   1B;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             obesity.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               98US-0089689.
99US-0126175.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       99WO-US13737
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Protein;
                                                                                                                                                                                                                                                                            117pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         94.6%;
90.1%;
angiofibroma,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       229
                                                                                                                                                                                                                                                                                 English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 369;
Pred. No. 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ΑA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
wound granulation,
                                                                                                                                                                                                                                                                                                                                            e.g. treatment of benign tumors
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 16;
3.8e-40;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  471;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          psoriasis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NO:2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       60
```

```
20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          88888×3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Y31991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              RESULT 12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                                                                                                                                                                               radial keratotomy; sickle cell anaemia; sarcoid; pseudoxanthoma elasticum; Paget's disease; vein occlusion; artery occlusion; carotid obstructive disease; chronic uveit chronic vitritis; Lyme's disease; Backets disease; Bechets dismyopia; optic pit; Stargart's disease; pars planitis; chronic retinal detachment; hyperviscosity syndrome; toxopla post-laser complication; fibrovascular tissue proliferation;
                 W09949885-A2
                                                                 Protein
                                                                                                                                                                                                                                                                                                                                                                                                                                   acne rosacea; phylectenulosis; syphilis; Mycobacteria infection; lipid degeneration; chemical burn; ulcer; herpes simplex infection; Herpes zoster infection; protozoan infection; Kaposi's sarcoma; Mooren ulcer; Terrien's marginal degeneration; marginal keratolysis; trauma; systemic lupus; polyarteritis; Wegener's sarcoidosis; scleritis; Steven's Johnson disease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    corneal neovascularization; retinopathy of prematurity; corneal graft rejection; neovascular glaucoma; retrolental fibroplasia; epidemic keratoconjunctivitis; vitamin A deficiency; contact lens overwear; atopic keratitis; superior limbic keratitis; pterygium keratitis sicca; sogrens;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Type IV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Type IV collagen; NC1 domain; non-collagenous domain; human; angiogenesis; tumour; metastasis; therapy; diabetic retinopathy; rheumatoid arthritis; retinal neovascularization;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           05-JAN-2000 (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    addessions, atherosclerosis, scleroderma, hypertrophic scars, cat scratch disease, Helicobacter pylori ulcers, dialysis graft vascular access stenosis, contraception and obesity. The compositions can be used to inhibit a disease characterised by angiogenic activity, in conjunction
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       choroidal neovascularization; macular degeneration;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Y31991 standard; Protein; 260 AA
                                                                                                                                  Protein
                                                                                                                                                                  Peptide
                                                                                                                                                                                                                                                                                                      haemangioma;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    100 nirpfisrcav 110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      radiation therapy, chemotherapy or
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          229
                                                                                                                                                                                                                                                                                    Osler-Weber-Rendu; AIDS; ocular neovascular disease; is; chronic inflammation; Crohn's disease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A
                                                               /note-
26..26(
                                                                                                /note=
18..25
                                                                                                                                /note= 18..260
                                                                                                                                                                                Location/Qualifiers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NC1 domain alpha-1 monomer.
                                                               260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     82.3%;
77.5%;
                                                                               "affinity tag"
                                                                                                                                              "BM40 signal peptide"
                                             "NC1 alpha-1 monomer"
                                                                                                               "mature protein
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 321;
Pred. No. 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      immunotherapy.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 21;
.2e-34;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length
                                                                                                                                                                                                                                                                                                                                    toxoplasmosis;
                                                                                                                                                                                                                                                                                                                                                                                     uveitis;
                                                                                                                                                                                                                                                                                                                                                                     disease;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
```

Qy Qy

71 61

ALEPYISRCTV 71

Matches

Similarity

82.3%; 77.5%;

Score 321; DB zv, Pred. No. 3.7e-34; ""smatches 7;

Length 260; Indels

0;

Gaps

0

Conservative

1 QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60

밁

131 nirpfisrcav 141

```
Mooren ulcer, Terrien's marginal degeneration, marginal keratolysis, trauma, systemic lupus, polyarteritis, Wegener's sarcoidosis, scleritis, Steven's Johnson disease, radial keratotomy, sickle cell anaemia, sarcoid, pseudoxanthoma elasticum, Pagets disease, vein occlusion, artery occlusion, carotid obstructive disease, chronic curvititis, Lyme's disease, Eales disease, Bechets disease, myopia, optic pits, Stargarts disease, pars planitis, chronic retinal detachment, hyperviscosity syndromes, toxoplasmosis, posticiater complications abnormal proliferation of fibrorecular posticians abnormal proliferation of fibrorecular posticians.
                                                                                             post-laser complications, abnormal proliferation of fibrovascular tissue, haemangiomas, Osler-Weber-Rendu, AIDS, ocular neovascular disease, osteoarthritis, chronic inflammation, Crohn's disease,
                                                                                                                                                                                                                                                                                                                                                                                                    corneal graft rejection, neovascular glaucoma, retrolental fibroplasia, epidemic keratoconjunctivitis, vitamin A deficiency, contact lens overwear, atopic keratitis, superior limbic keratitis, pterygium keratitis sicca, sogrens, acne rosacea, phylectenulosis, pterygium keratitis sicca, sogrens, lipid degeneration, chemical syphilis, mycobacteria infections, lipid degeneration, chemical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             retinal neovascularization, choroidal neovascularization, macular degeneration, corneal neovascularization, retinopathy of prematurity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        monomers can be produced via recombinant protein expression. The polynucleotides and polypeptides are used to treat an angiogenesis mediated disorder or condition, especially selected from solid and blood-borne tumours, diabetic retinopathy, rheumatoid arthritis,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          matrix, each method comprising contacting the tumour or animal tissue with 1 or more isolated type IV collagen NC1 alpha chain monomer(s) selected from the group consisting of alpha-1, alpha-alpha-3 and alpha-6 NC1 chain monomers (see Y31991-96). The
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        methods and kits for inhibiting angiogenesis, tumour growth and metastasis, and endothelial cell interaction with the extracellular
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            facilitate protein secretion, and a mature protein comprising affinity tag (facilitates purification and identification of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     This sequence represents a recombinant type IV collagen non-collagenous (NC1) domain alpha-1 polypeptide composed of
Sequence
                                                                 ulceritive colitis, psoriasis, atherosclerosis,
                                                                                                                                                                                                                                                                                                                                                         burns, bacterial ulcers, fungal ulcers, herpes simplex infections, herpes zoster infections, protozoan infections, Kaposi's sarcoma,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          material) and the alpha-1 chain monomer.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 BM40 signal sequence (which is cleaved from the mature protein)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Disclosure; Fig 17a; 56pp;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Inhibition of angiogenesis with non-collagenous alpha chain monomer useful for treating e.g. tumor growth or metastasis, neovascularisation, etc
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Hudson
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    27-MAR-1998;
29-OCT-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           26-MAR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           07-OCT-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (UNIV ) UNIV KANSAS MEDICAL CENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       BG,
260 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sarras
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  98US-0079783
98US-0106170
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        99WO-US06445
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        The invention provides
                                                                      and pemphigoid (all
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   6
```

13

```
RESULT
Y97553
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         userul for treating diseases and conditions with accompanying undesired anglogenesis, e.g. solid and blood-borne tumours (e.g. melanomas, carcinomas, sarcomas, rhabdomyosarcoma, retinoblastoma, Ewing sarcoma, neuroblastoma, osteosarcoma or leukaemia). These are also applicable to treating non-tumourigenic diseases and conditions with accompanying undesired anglogenesis, e.g. diabetic retinopathy, rheumatoid arthritis, retinal neovascularisation, choroidal neovascularisation, muscular degeneration, corneal graft rejection, vitamin A deficiency, atopic keratitis, Mycobacteria infections, chemical burns, Kaposi's sarcoma, sickle cell anaemia, sarcoid, carotid chetruntima.
                                                                                                   Sequence
                                                                                                                                                                                                                                                                                                                                                                                        cells or tissue with a polypeptide composition specific integrin receptors. The methods and the
                                                                                                                                                                                                                                                                                                                                                                                                                                               This sequence is a human type IV collagen alpha chain monomer, designated alphal(IV)NC1. The invention relates to a method for inhibiting angiogenesis, tumour growth or metastases, or endothelial cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Disclosure;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Brooks P,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               muscular degeneration; corneal graft rejection; vitamin A deficiency; atopic keratitis; Mycobacteria infection; chemical burn; sarcoid; Kaposi's sarcoma; sickle cell anaemia; carotid obstructive disease;
                                                                                                                                           complications,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Use of antagonists of specific integrin receptors for inhibiting angiogenesis, tumour growth or metastases, or endothelial cell integranting with the extracellular matrix
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     WPI; 2000-664962/64.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           31-MAR-2000; 2000WO-US08678
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               12-OCT-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      WO200059532-A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   chronic inflammation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            retinoblastoma; Ewing sarcoma; neuroblastoma; osteosarcoma; diabetic retinopathy; rheumatoid arthritis; neovascularisati
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Type IV collagen alpha chain monomer; human; inhibitor; angiogenesis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Human alpha1(IV)NC1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Y97553
                                                                                                                                                                                                                                                                                                                                                                                                                              interactions with the extracellular matrix, comprising contacting the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    interactions with the extracellular matrix
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (BIOS-) BIOSTRATUM INC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   12-FEB-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Y97553 standard; Protein; 260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                tumour growth;
                      Local Similarity
                                                                                                                                                                                                                                                                                                                                                                      cific integrin receptors. The methods and the antagonists are useful inhibiting angiogenesis, tumour growth or metastases, or endothelial
                                                                                                                                                                                                                                                                                                                                                      interaction with the extracellular matrix. The antagonists are also
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Hudson B;
                                                                                                     260
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Fig 17a; 78pp; English.
    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (first
                                                                                                     AA,
                                                                                                                                         chronic inflammation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    99US-0127391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  integrin receptor; carcinoma;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           protein sequence
                      82.3%;
77.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 psoriasis; therapy; alpha1(IV)NC1
                      Pred.
                                      Score
  Mismatches
e 321; DB 21;
. No. 3.7e-34;
ismatches 7;
                                                                                                                                         or
                                                                                                                                       psoriasis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  sarcoma;
                                                                                                                                                                                                                                                                                                                                                                                                            containing antagonists of
                                    Length 260;
  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  rhabdomyosarcoma;
  0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              leukaemia;
Gaps
  0;
```

QΥ

1 QRAHGQDLGTLGSCLQRETTMPELECNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60

Qy

1 QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60

Query Match Best Local : Matches

Similarity

82.3%; 77.5%;

Score 321; UD -Pred. No. 6.2e-34;

Length 406; Indels

0;

Gaps

0;

Conservative

9;

```
QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DR DR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PFXX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   XX
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           XΧ
                                                           cardiovascular, renal, and proliferative disorders. The proteins may also be used in the treatment of wounds and infectious diseases.

Polynucleotide sequences F18425 - F18433 and peptide B58549 are used in the course of the invention for the identification and characterisation
                                                                                                                                                                                   immunomodulatory; muscular active general; vulnerary; gastrointestinal general; nephrotropic; antiinfective; gynecological; or antibacterial activity. The invention also includes antibodies specific for the protroit or polynucleotide sequences. The lung cancer associated polynucleotide sequences may be used for detection of lung cancer, chromosome identification, as chromosome markers, and for numerous other diagnost.
                                                                                                                                                                                                                                                                                                            associated proteins represented in B58106 - B58548. Lung cancer associated proteins and polynucleotide sequences, their agonist antagonists may have neuroprotective; cytostatic; cardioactive;
                                                                                                                                                             identification, as chromosome markers, and for numerous other diagnostic or research purposes. The proteins may be used to treat disorders such a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      cardioactive; immunomodulatory; muscular active; vulnerary;
gastrointestinal; nephrotropic; antiinfective; gynecological;
Sequence
                                                                                                                                            neural, immune, muscular, reproductive, gastrointestinal, pulmonary,
                                                                                                                                                                                                                                                                                                                                                        Polynucleotide sequences F17982 - F18424 encode human lung cassociated proteins represented in B58106 - B58548. Lung ca
                                                                                                                                                                                                                                                                                                                                                                                                                   Claim 11; Page 996-998; 1425pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Lung cancer associated gene sequences, referred to as lung cancer antigens, useful for treatment, prevention, and diagnosis of disorders
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  N-PSDB;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Ruben
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            08-MAR-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     21-SEP-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                proliferative disorder; wound healing; infectious disease.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      antibacterial; diagnosis; neural disorder; immune
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Human;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      B58169 standard; Protein; 406 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (HUMA-) HUMAN GENOME SCI INC (ROSE/) ROSEN C A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       12-MAR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WO200055180-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Lung cancer associated polypeptide sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       14-MAR-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               131 nirpfisrcav 141
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            71 erahgqdlgtagsclrkfstmpflfcninnvcnfasrndysywlstpepmpmsmapitge 130
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61 ALEPYISRCTV 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  14
                                     the polynucleotide and protein sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2000-587514/55
DB; F18045.
                                                                                                                                                                                                                                                                                                                                                                                                                                                             Lung
406
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 cancer associated protein; neuroprotective; cytostatic;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              2000WO-US05918
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  99US-0124270
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IJ
                                                                                                                                                                                                                                                                                                                                    their agonists,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    disorder;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             507
                                                                                                                                                                                                                                                                                                                                                                              cancer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    reproductive;
                                                                                                                                                                                                                                                     protein
                                                                                                                                                                    as
```

```
RESULT 15
P93524
                                    ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       밁
                                                                                                                                                       RXFFB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               E X X E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       В
                                                                     Query Match
Best Local Similarity
Matches 54; Conserv
                                                                                                                                                                                                  The peptides in the features table are claimed (Claim 1, p. 22). They were synthesised using the Merrifield solid phase method. Binding assa were carried out using peptides TS-1, TS-2 and TS-3. TS-1 promotes adhesions of aortic endothelial cells, metastatic carconoma M cells, normal rat fibroblasts, MM fibrosarcoma cells, C6 glioma cells and A431 breast carcinoma cells. TS-2 binds to type IV collagen, to heparin and promotes adhesion of the above cells. Peptides TS-1, TS-2 and TS-3 may be used to promote wound healing and implant acceptance, promote cellular attachment to culture substrata or inhibit the metastasis of malignant cells. They may be used to coat a prosthetic device.
                                                                                                                                                                                                                                                                                                                                                                                                                       Polypeptide(s) with type IV collagen activity - used to promote wound healing, implant acceptance and cellular attachment and inhibit malignant cells
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Alpha-1-NC1 domain; type IV collagen; cell adhesion; heparin; aortic endothelial cells; metastatic carcinoma M4 cells; rat fibroblasts; MM fibrosarcoma cells; C6 glioma cell; A431 breast carconoma cells; wound healing; implant acceptance.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             WPI; 1989-130015/17.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Key
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Complete sequence of the alpha-1-NC1 domain of type IV collagen.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   04-JUN-1990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     P93524 standard; protein; 229 AA.
                                                                                                                                                       Sequence
                                                                                                                                                                                         device.
                                                                                                                                                                                                                                                                                                                                                                                        Fig 2; page 1/12; 40pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Tsilibary EC,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (MINU ) MINNESOTA UNIVERSITY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                08-OCT-1987;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               30-AUG-1988;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              20-APR-1989.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               WO8903392-A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      P93524;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     : |:|||| |
277 nirpfisrcav 287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     61 ALEPYISRCTV 71
                                                                                                                                                       229 AA;
                                                                   80.8%; Score 315; DB 10; ilarity 76.1%; Pred. No. 1.9e-33; Conservative 10; Mismatches 7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Furcht LT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                87US-0106858
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               88WO-US03023
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             /note="TS-2"
17..27
/note="TS-3"
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 49..60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Location/Qualifiers 201..216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               note="TS-1"
                                                                                                  Length 229;
                                                                     Indels
                                                                                                                                                                                                                                                                                                                                      p. 22). They
Binding assays
                                                                     0;
                                                                     Gaps
                                                                     0;
```

Ър

```
В
            Qy
100 nirpfisrcav 110
      61 ALEPYISRCTV
             71
```

Search completed: April 13, Job time: 302 sec 2001, 15:41:19

```
Database
                                                                                                                                                                                                                                                                                                                                                                        Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Run
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     OM protein -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  on:
Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                               seq
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                               length: 0
length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-09-543-371-10_COPY_54_124
390
                                                                                                                                                                                                                                                                                                                                       SPTREMBL_15:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         374700 segs, 117207915 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  BLOSUM62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                April 13, 2001, 15:45:37; Search time 54.98 Seconds
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GenCore version 4.5
Copyright (c) 1993 - 2000 Compugen Ltd
                                                                                                                                                                                                                                                                          sp_archea:*
sp_bacteria:*
sp_fungi:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   QRAHGQDLGTLGSCLQRFTT.....MNMAPITGRALEPYISRCTV 71
                                                                                                                                                                      sp_phage: *
                                                                                                                                                                                      sp_mhc:*
sp_organelle:*
                                                                                                                                                                                                                        sp_mammal:*
                                                                                                                                                                                                                                                            sp_human:*
                                                                                          sp_unclassified:*
sp_vertebrate:*
                                                                                                                                sp_rodent:*
                                                                                                                                                                                                                                           sp_invertebrate:*
                                                                                                                                             sp_plant:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (without alignments)
151.360 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        374700
```

ß
SU
MMAF
₽
ΙE
ŝ

19	18	17	16	15	14	13.	12	11	10	9	8	7	6	5	4	ω	2	1	Result No.
2 57	257	294	311	314	314	319	319	321	325	359	371	371	372	374	374	374	387	390	Score
65.9	65.9	75.4	79.7	80.5	80.5	81.8	81.8	82.3	83.3	92.1	95.1	95.1	95.4	95.9	95.9	95.9	99.2	100.0	Query Match Length
1759	1758	1752	161	886	225	253	179	229	979	230	1669	246	210	212	203	203	212	245	Length
σ	ഗ	σ	11	4	Φ	11	11	4	13	11	11	11	σ	6	0	6	თ	4	DB G
Q19099	Q19098	Q07265	Q61430	Q9NUB7	Q28271	Q61436	P70165	Q9NYC5	Q9I9K3	Q63122	Q9QZS0	Q61435	Q28273	Q28567	Q29032	Q28682	Q28512	Q9NYC4	ID
Q19099 caenorhabdi	Q19098 caenorhabdi	Q07265 strongyloce	Q61430 mus musculu	Q9nub7 homo sapien	Q28271 canis famil	Q61436 mus musculu	P70165 mus musculu	Q9nyc5 homo sapien	Q9i9k3 gallus gall	Q63122 rattus norv	Q9qzs0 mus musculu	Q61435 mus musculu	Q28273 canis famil	Q28567 ovis aries	Q29032 sus scrofa	Q28682 oryctolagus	Q28512 macaca mula	Q9nyc4 homo sapien	Description

45	44	43	42	,4 1	40	39	38	37	36	ω 5	34	ω ω	32	31	30	29	28	27	26	25	24	23	22	21	20
60.5	60.5	61	61.5	61.5	62.5	62.5	64.5	71	72.5	166	202	213	213	219	232	233	233	235	235	235	235	241	242	249	254
15.5	15.5	15.6	15.8	15.8	16.0.	16.0	16.5	18.2	18.6	42.6	51.8	54.6	54.6	56.2	59.5	59.7	59.7	60.3	60.3	60.3	60.3	61.8	62.1	63.8	65.1
736	223	495	1290	470	254	252	986	986	106	854	1779	1682	312	208	205	1940	1761	1691	1690	1690	1600	202	673	1802	1747
6	8	G	S	11	4	4	G	S	6	G	σ	11	11	σ	σ	u	տ	4	4	4	4	σ	4	ഗ	ū
018805	Q9TC08	Q9V9R4	Q9U6L1	Q05704	Q9Y2N0	Q15157	076803	076122	Q9TS99	009238	Q9VMV4	Q9QZR9	Q64457	Q29468	Q28274	Q9VMV5	018407	Q9Y4L4	Q9UMG6	Q12823	Q90EH6	Q28272	Q14052	Q17163	Q26640
018805 cercopithec	Q9tc08 dusona egre	Q9v9r4 drosophila	Q9u6ll plasmodium	Q05704 rattus norv	Q9y2n0 homo sapien		_		Q9ts99 bos taurus	009238 pseudocorti	Q9vmv4 drosophila	Q9qzr9 mus musculu	Q64457 mus musculu	Q29468 canis famil	Q28274 canis famil	Q9vmv5 drosophila	018407 drosophila	homo	Q9umg6 homo sapien	Q12823 homo sapien	homo s	Q28272 canis famil	Q14052 homo sapien	Q17163 brugia mala	Q26640 strongyloce

ALIGNMENTS

```
RESULT
Q9NYC4
                                     RESULT
Q28512
                                                                                   밁
                                                                                                      Ş
                                                                                                                                 Дb
                                                                                                                                                    Ωy
                                                                                                                                                                                                                                      Query Match
Best Local :
                                                                                                                                                                              Matches
Q28512 PRELIMINARY; PRT;
Q28512;
01-NOV-1996 (TrEMBLrel. 01, Created)
                                                                                                                                                                                                                                              Maeshima Y., Colorado P.C., Torre A., Holthaus K.A., Grunkemeyer J.A., Ericksen M.D., Hopfer H., Xiao Y., Stillman T.E., Kalluri R.; "Distinct anti-tunor properties of a type IV collagen domain derived from basement membrane."; J. Biol. Chem. 0:0-0(2000).

EMBL; AF258351; AAF72633.1; -...
                                                                                                                                                                                                                                                                                                                                                                                                             01-OCT-2000 (TrEMBLrel.
01-OCT-2000 (TrEMBLrel.
01-OCT-2000 (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                      SEQUENCE
                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                    NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                                                                                                                       Homo sapiens (Human)
                                                                                                                                                                                                                                                                                                                                                                                                    TUMSTATIN (FRAGMENT).
                                                                                                                                                                                                                                                                                                                                                                                                                                                   Q9NYC4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q9NYC4
                                                                                   y Match 100.0%;
Local Similarity 100.0%;
hes 71; Conservative 0,
                                                                                                         61 ALEPYISRCTV 71
                                                                                                                                                                                                                                      245 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                Chordata;
Primates;
                                                                                                                                                                                                                                      26952 MW; 1EE5028354D9A57D CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                              15,
15,
                                                                                                                                                                                                                                                                                                                                                                                                             Created)
Last sequence update)
Last annotation update)
                                                                                                                                                                              0;
                                                                                                                                                                            Score 390; DB 4;
Pred. No. 3.8e-42;
); Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                               Craniata; Vertebrata; Euteleostomi; Catarrhini; Hominidae; Homo.
                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRT;
                          212 AA.
                                                                                                                                                                                                                                                                                                                                                                                                                                                              245 AA.
                                                                                                                                                                                                 Length 245;
                                                                                                                                                                              Indels
                                                                                                                                                                              0;
                                                                                                                                                                            Gaps
```

0;

update)

```
QΥ
                                                                                ACCOUNT DIT
                                                                                                                                                                                                                                                                                                                              RESULT
Q28682
                                                                                                                                                                                                                                                                                                                                                                                      Q
                                                                                                                                                                                                                                                                                                                                                                                                           Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                           2
                                                                                                                                                                                                                                                                                                                                                                     뫄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DT RAARCOCCORA
                                         Query
Best I
                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Ma
Best Loc
Matches
                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Turner A.N., Ryan J.J., Derry Mason P.J., Pusey C.D.;
Submitted (MAR-1996) to the ENEMBL; L47280; AAA91861.1;
INTERPRO; IPRO00504;
INTERPRO; IPRO01442;
                                                                                NON_TER
NON_TER
SEQUENCE
                                                                                                                                                        TISSUE-RENAL CORTEX:
TURNER A.N., Ryan J.J., Derr
Mason P.J., Pusey C.D.;
Submitted (MAR-1996) to the
                                                                                                                   INTERPRO; IPR000504; -.
INTERPRO; IPR001442; -.
PFAM; PF01413; C4; 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NON_TER
SEQUENCE
                                                                                                             PROSITE;
                                                                                                                                                                                                                              Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                                   Oryctolagus
                                                                                                                                                                                                                                                                     ALPHA-3 TYPE
                                                                                                                                                                                                                                                                              01-NOV-1996
01-MAY-2000
                                                                                                                                                                                                                                                                                                            Q28682;
                                                                                                                                                                                                                                                                                                                       Q28682
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Macaca mulatta (Rhesus macaque).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata;
Mammalia; Eutheria; Primates; Catarrhini; Cercopithe
Cercopithecinae; Macaca.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            01-NOV-1996 (TrembLrel.
01-MAY-2000 (TrembLrel.
ALPHA-3 TYPE IV COLLAGEN
                                                                                                                                                                                                                     NCBI_TaxID=9986;
                                                                                                                                                                                                                                                                                                  01-NOV-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   NCBI_TaxID=9544;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TISSUE=RENAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE FROM N.A.
                                                                                                                                                                                                   EQUENCE FROM N.A.
                                           Local
                                                                                                                                                                                                                                                                                                                                                                     82
                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                          Local
                                                                                                                                                                                                                                                                                                                                                                                                           22
                                                   Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Match
QRAHGQDLGTLGSCLQRETIMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR
                                                                                                                                                                                                                                                                                                                                                                                                                  QRAHGQDLGTLGSCLQRETTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60
                                                                                                                                                                                                                                                                                                                                                                             ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                     ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                        ERAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 81
                                                                                                                                                 L47283; AAA91893.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PF01413; C4;
                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                               h 99.2%;
Similarity 98.6%;
70; Conservative
                                                                                                            PS00030;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PS00030;
                                                                           203
203
                                                                                                                                                                                                                                                                    (TrEMBLrel. () (TrEMBLrel. () (TrEMBLrel. () ) (TrEMBLrel. () )
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                212
212 ‡
                                                                                                                                                                                                                                 cuniculus (Rabbit).
Chordata; Craniata;
                               Conservative
                                                                                                                                                                                                                                                                                                                    PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CORTEX;
                                                                                AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBLrel. 01, Last sequence update)
EMBLrel. 13, Last annotation updat
COLLAGEN (FRAGMENT).
                                                                                                                                                                                                                                                                                                                                                                    92
                                                                                                                                                                                                                                                                                                                                                                                      71
                                                                                                           RNP_1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RNP_1;
                                                                               203
22213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         212
                                                                                                                                                                                                                               Lagomorpha;
                                        95.98;
93.08;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 23469
                                                                                                                                                                                                                                                                              01,
13,
                                                                                                                                                                              Derry C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Derry
                                                                                                            UNKNOWN_1
                                                                                                                                                                                                                                                                   01, Last sequence up 13, Last annotation (FRAGMENT).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             UNKNOWN_1
                                                                                MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                M.
                               5
                                                                                                                                                            EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                               Created)
                                       Score
Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 387; DB 6;
Pred. No. 7.8e-42;
1; Mismatches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             С.J.,
                                                                                                                                                                                                                                                                                                                    PRT;
                                                                               E14173816E4D9E30 CRC64;
                                                                                                                                                                              .J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               4BC574A64E357E64 CRC64;
                               Mismatches
                                                                                                                                                                                                                              Leporidae;
                                       374;
No. 3.
                                                                                                                                                                             Cashman
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Cashman
                                                                                                                                                                                                                                                                                                                  203
                             DB 6;
3.5e-40;
nes 0;
                                                                                                                                                                                                                                       Vertebrata; Euteleostomi;
                                                                                                                                                                                                                                                                           update)
on update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Cercopithecidae;
                                                                                                                                                                                                                            Oryctolagus
                                                                                                                                                                             S.J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             S
                                                                                                                                                          databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 212
                             Indels
                                                                                                                                                                              Katbamna
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Katbamna
                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Ι.,
                             0,
                                                                                                                                                                                                                                                                                                                                                                                                                                              0;
                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                             Gaps
           60
                             0
                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
```

```
Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PROPERTY OF THE STATE OF THE ST
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Дb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                      Ovis aries (Sheep).
Eukaryota, Metazoa; (
Mammalia; Eutheria; (
Bovidae; Caprinae; On 
NCBI_TaxID-9940;
                                                                                                                                                                                                                                                                                                                         Q28567;
01-NOV-1996
01-NOV-1996
01-MAY-2000
                                                     TISSUE=RENAL CORTEX;
Turner A.N., Ryan J.J., Derr
Mason P.J., Pusey C.D.;
Submitted (MAR-1996) to the
EMBL; L47282; AAA91904.1; ...
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NON_TER
NON_TER
SEQUENCE
                                                                                                                                                    SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                       COL4A3
                                                                                                                                                                                                                                                                                                           ALPHA-3
                                                                                                                                                                                                                                                                                                                                                                                                        Q28567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Turner A.N., Ryan J.J.
Mason P.J., Pusey C.D.
Submitted (MAR-1996) t
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Eukaryota; Metazoa;
Mammalia; Eutheria;
INTERPRO; IPR000504;
INTERPRO; IPR001442;
PFAM; PF01413; C4; 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     INTERPRO; IPRO00504; -.
INTERPRO; IPRO01442; -.
PFAM; PF01413; C4; 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TISSUE=RENAL CORTEX;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NCBI_TaxID=9823;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sus scrota (Pig)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COL4A3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ALPHA-3 TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                01-MAY-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      01-NOV-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      029032;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q29032
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EMBL; L47284; AAA91882.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              22
                                                                                                                                                                                                                                                                                                                                                                                                                                              σ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QRAHGQDLGTLGSCLQRETTMFFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   GLEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EQAHGQDLGTLGSCLQRFTTMPFLFCNINDVCNFASRNDYSYWLSTPALMPMDMAPITGK 81
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PS00030;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               203
203 AA;
                                                                                                                                                                                                                                                                                                       5 (Tremblrel. 01, 0
5 (Tremblrel. 01, 1
0 (Tremblrel. 13, 1
PE IV COLLAGEN (FRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (TrEMBLrel.
                                                                                                                                                                                                                                                                                                                                                                                                      PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ٧I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COLLAGEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   92
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     92
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     RNP_1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             203
22326 J
                                                                                                                                                                                                              Ovis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      .J.,
                                                                                                                                                                                                                            Chordata; Craniata; Cetartiodactyla; Rur
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Chordata; Craniata; Vertebrata; Cetartiodactyla; Suina; Suidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  95.9%;
93.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              01,
01,
13,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  the
                                                                                                               Derry
                                                                                                                                                                                                                                                                                                     01, Last sequence update)
13, Last annotation updat
(FRAGMENT).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Derry
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       UNKNOWN_1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (FRAGMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Last sequence update)
Last annotation update)
                                                                       EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                  Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 374; DB 6; Pred. No. 3.5e-40;
                                                                                                           С.J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  С.J.,
                                                                                                                                                                                                                                                                                                                                                                                                      PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             E3B20E32D9A245AA CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mismatches
                                                                                                               Cashman
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Cashman
                                                                                                                                                                                                                                Ruminantia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          203
                                                                                                                                                                                                                                             Vertebrata;
                                                                                                                                                                                                                                                                                                                                                                                                    A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    s.J.,
                                                                                                                                                                                                                                                                                                                         update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length
                                                                                                                                                                                                                              Pecora;
                                                                                                               Katbamna
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Katbamna
                                                                                                                                                                                                                                                 Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Euteleostomi;
Sus.
                                                                                                                                                                                                                              Bovoidea;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Η.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                0,
```

```
RESULT
Q61435
ID Q6
AC Q6
DT Q1
DT Q1
DT Q1
DT Q1
DT Q1
GN CC
                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                              δõ
                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  P T D D R R R R R R R R R O O O O O D T T T T D D R R R T T T X X C P V X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P X C P 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   рь
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SOFT
                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local S
Matches 66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      *NON_TER
NON_TER
SEQUENCE
                   01-NOV-1996
01-NOV-1996
01-MAY-2000
PROCOLLAGEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  01-NOV-1996
01-NOV-1996
01-MAY-2000
                                                                                            Q61435;
Q61435;
                                                                                                                                                                                                                                                                                                                                                                                                                                                       NON_TER
NON_TER
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q28273
Q28273;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Thorner P.S., Zheng K., Kalluri R., Jacobs R., Huds "Coordinate gene expression of the alpha3, alpha4, of collagen type IV. Evidence from a canine model of collagen type IV.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Canis familiaris (Dog).
Canis familiaris (Chordata;
Charvota; Metazoa; Chordata;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         nephritis with a COL4A5 gene mutation.";
J. Biol. Chem. 271:13821-13828(1996).
EMBL; U50935; AAC48585.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Eukaryota; Metazoa; Chordata; (
Mammalia; Eutheria; Carnivora; 
NCBI_TaxID=9615;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDLINE=96278820; PubMed=8662866;
Thorner P.S., Zheng K., Kalluri R
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STRAIN-SAMOYED;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COL4A3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COLLAGEN TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PFAM;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NTERPRO;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NTERPRO;
                                                                                                                                                                                                            92
                                                                                                                                                                                                                                                61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            82
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61
                                                                                                                                                                                                                                                                                     32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   22
                                                                                                                                                                                                                                                                                                                         ب
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        _
                                                                                                                                                       7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60
                                                                                                                                                                                                            ALEPYISRCTV 102
                                                                                                                                                                                                                                                  ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ALEPYISRCTV 71
                                                                                                                                                                                                                                                                                   EQAHGQDLGTLGSCLQRFTTMPFLFCNINNVCNFASRNDYSYWLSTPALMPMDMAPITGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PRO; IPRO01442; -. PF01413; C4; 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              66;
                                                                                                                                                                                                                                                                                                                                                                66;
                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PS00030; RNP_1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PS00030;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       IPR000504;
                   5 (TrEMBLrel. 01, 05 (TrEMBLrel. 01, 10) (TrEMBLrel. 13, 10) (TrEMBLrel. 13, 11)
                                                                                                                                                                                                                                                                                                                                                                                                                                                         210
210 #
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (TrEMBLrel.) (TrEMBLrel.)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        212 AA;
                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                  PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ٧
                                                                                                                                                                                                                                                                                                                                                                                                                                                           AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MBLrel. 01, Last sequence update)
MBLrel. 13, Last annotation updat
ALPHA 3 CHAIN (FRAGMENT).
                                                                                                                                                                                                                                              71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            92
                                                                                                                                                                                                                                                                                                                                                                                                                                                           210
23025
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        212
23417
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               RNP_1;
                                                                                                                                                                                                                                                                                                                                                                                95.4%;
93.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               95.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                01,
01,
13,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  UNKNOWN_1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 UNKNOWN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ₩;
                                                                                                                                                                                                                                                                                                                                                                                                                                                           X.
                                     Last sequence update)
Last annotation update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5;
                                                                          Created)
                                                                                                                                                                                                                                                                                                                                                              5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Created)
                                                                                                                                                                                                                                                                                                                                                                                Pred.
                     (COLLAGEN
                                                                                                                                                                                                                                                                                                                                                                                                Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Craniata; Ve; ; Fissipedia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0F5839FCB81BDD8C CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                           31119E4CA823633D CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               374;
No. 3.
                                                                                                                                                                                                                                                                                                                                                                            372;
No. 6
                                                                                                                  246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               210
                       ٧I
                                                                                                                                                                                                                                                                                                                                                      DB 6;
6.5e-40;
0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Vertebrata;
ia; Canidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 6;
.6e-40;
                                                                                                                  A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ą
                 ALPHA 3 CHAIN) (FRAGMENT)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  alpha4, and alpha5 chains model of X-linked
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Hudson
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 212;
                                                                                                                                                                                                                                                                                                                                                                                                  Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Euteleostomi;
Canis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         B
                                                                                                                                                                                                                                                                                                                                                                                                  210;
                                                                                                                                                                                                                                                                                                                                                              0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0;
                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                   91
                                                                                                                                                                                                                                                                                                                                                              0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            0;
```

```
090ZSO
200 AC
20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                Q9QZSO;
01-MAY-2000
01-MAY-2000
01-OCT-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NON_TER
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mus musculus (Mouse),
Eukaryota; Metazoa; Chordata;
Entheria; Rodentia;
                                      mouse model of alport syndrome.";
Genomics 61:113-124(1999).
EMBL; AF169387; AAD50449.1; -.
MGD; MGI:104688; CC14a3.
INTERPRO; IPRO00087; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Miner J.H.;
Submitted (MAY-1996) to
EMBL; Z35166; CAA84529.1
MGD; MGI;104688; Col4a3.
                    INTERPRO; INTERPRO;
                                                                                                                                             MEDLINE=20005934; PubMed=10534397;
Lu W., Phillips C.L., Killen P.D., Hlaing
Elder F.F.B., Miner J.H., Overbeek P.A., N
"Insertional mutation of the collagen gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Submitted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A. STRAIN=BALB/C;
                                                                                                                                                                                                                                                                                                                        Eukaryota;
Mammalia;
                                                                                                                                                                                                                                                                                                                                                                                            COL4A3
                                                                                                                                                                                                                                                                                                                                                                                                              ALPHA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Q9QZS0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STRAIN=BALB/C;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Miner J.H.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A. STRAIN-BALB/C;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE=95050957; PubMed=7962065;
Miner J.H., Sanes J.R.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NCBI_TaxID=10090;
                                                                                                                                                                                                                                       TISSUE=KIDNEY;
                                                                                                                                                                                                                                                           SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                    NCBI_TaxID=10090;
                                                                                                                                                                                                                                                                                                                                                                 Mus musculus (Mouse)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PROSITE;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      developmental
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "Collagen IV alpha 3, alpha 4, and alpha 5 chains laminae: sequence, distribution, association with
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        INTERPRO;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NTERPRO;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Cell
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               \vdash
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                3 COLLAGEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PF01413;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            66;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Biol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         01413; C4; 2.
PS00030; RNP_1;
                                                                                                                                                                                                                                                                                                                      Eutheria;
IPR000504;
IPR001442;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  IPR000504; -. IPR001442; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   (JUL-1994)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   246
                                                                                                                                                                                                                                                                                                                                                                                                              (TrEMBLrel.
(TrEMBLrel.
(TrEMBLrel.
LAGEN IV.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               127:879-891(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      switches."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         71
                                                                                                                                                                                                                                                                                                                        Chordata;
Rodentia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   26993
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         95.1%;
93.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          to the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ţ
                                                                                                                                                                                                                                                                                                                                                                                                                                  13,
15,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            UNKNOWN_1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score
Pred.
5; Mis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                  Last sequence update)
Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Craniata; Vert
Sciurognathi;
                                                                                                                                                                                                                                                                                                                      Craniata; Ver
Sciurognathi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A9B5434F5836F324 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            371; DB 11
No. le-39;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1669
                                                                                                                                               genes
                                                                                                                                                                                                                                                                                                                                               Vertebrata;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Vertebrata;
                                                                                                                                                                      y T., Harrison
Meisler M.H.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       B
                                                                                                                                                  col4a3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Muridae;
                                                                                                                                                                                                                                                                                                                          Muridae;
                                                                                                                                                                                                                                                                                                                                                                                                                                  update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            databases
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        in rodent basal laminins, and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                    and
                                                                                                                                                                                                                                                                                                                                                 Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Euteleostomi;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Murinae;
                                                                                                                                                                                                                                                                                                                          Murinae;
                                                                                                                                                                                        W.R.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    246;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Mus
                                                                                                                                                                                                                                                                                                                          Mus
                                                                                                                                                    in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
```

δĠ

DЬ

Ωy

В

```
AC DAT DAT DAT DATE OF OCC.
                                                                                                            RESULT
Q919K3
                                                                                                                                                                                                  дЬ
                                                                                                                                                         밁
                                                                                                                                                                          Qy
                                                                                                                                                                                                                       Ş
                                                                                                                                                                                                                                                                                                   DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              QУ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SQ RR DR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local S
Matches 66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Q63122 PRELIMINARY;
Q63122;
01-NOV-1996 (TrEMBLrel. 0:
01-MAY-1999 (TrEMBLrel. 1:
01-MAY-2000 (TrEMBLrel. 1:
                                                                                                                                                                                                                                 ry Match
St Local Similarity
64; Conserv
                                      01-OCT-2000 (TrEMBLrel. 15, Created)
01-OCT-2000 (TrEMBLrel. 15, Last sequence update)
01-OCT-2000 (TrEMBLrel. 15, Last annotation updat
COLLAGEN IV Al CHAIN (FRAGMENT).
   Gallus gallus (Chicken).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Archosauria; Aves; Neognathae; Galliformes; Phasianidae; Phasiani
                                                                                                  Q919K3
                                                                                                                                                                                                                                                                                                             NON_TER
                                                                                                                                                                                                                                                                                                                                                                            Turner N., Ryan J.J., Derry Mason P.J., Pusey C.D.; Submitted (MAR-1999) to the EMBL; L47281; AAB72238.2; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PROSITE;
Collagen.
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                          STRAIN-SPRAGUE-DAWLEY; TISSUE-KIDNEY CORTEX;
Turner N., Ryan J.J., Derry C.J., Cashman S.J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Rodentia;
NCBI_TaxID=10116;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1479
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Rattus norvegicus
                                                                                                                                                                                                                                                                                                                                    PROSITE;
                                                                                                                                                                                                                                                                                                                                                PF'AM;
                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A
                                                                                                                                                                                                                                                                                                                                                                 INTERPRO; IPRO00504; -
                                                                                                                                                         100
                                                                                                                                                                          61 ALEPYISRCTV
                                                                                                                                                                                                  40
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61
                                                                                                                       10
                                                                                                                                                                                                        1 QRAHGODLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60
                                                                                                                                                                                              EHAHGQDLGTLGSCLQRFTTMPFLFCNVDNVCNFASRNDYSYWLSTPAPMPMDMAPITGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                KRAHGQDLGTLGSCLQRFTTMPFLFCNINNVCNFASRNDYSYWLSTPALMPMDMAPISGR 1538
                                                                                                                                                        ALEPYVSRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ALEPYISRCTV 1549
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            QRAHGQDLGTLGSCLQRFTTMFFLFCNVNDVCNFASRNDYSYWLSTPALMFMNMAPITGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ALEPYISRCTV 71
                                                                                                                                                                                                                                                                                                                                           PF01413; C4; 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PF01413; C4; 2.
TE; PS00030; RNP_1; UNKNOWN_1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                               PS00030; RNP_1; UNKNOWN_1
                                                                                                                                                                                                                                                                                                  230
230 A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1669 AA;
                                                                                                PRELIMINARY;
                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IV COLLAGEN
                                                                                                                                                                                                                                                                                                  AA;
                                                                                                                                                                            71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (Rat).
                                                                                                                                                                                                                                                                                                230
25398 MW;
                                                                                                                                                                                                                                                     92.1%;
90.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       95.1%;
93.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   161769 MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      01,
10,
13,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (FRAGMENT)
                                                                                                                                                                                                                                         Score 359; DB; Pred. No. 3.3e
5; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                      EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Last sequence update)
Last annotation updat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ۍ
۲:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 371; DB 11,
No. 7.4e-39;
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Craniata; Vertebrata;
Sciurognathi; Muridae;
                                                                                                                                                                                                                                                                                                29549E25314CC056 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  30976E59739A47B2 CRC64;
                                                                                                979
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  230
                                                                                                                                                                                                                                        DB 11;
.3e-38;
les 2;
                                                                                               A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A
                                                  update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     update)
                                                                                                                                                                                                                                                                                                                                                                                       databases
                                                                                                                                                                                                                                                                                                                                                                                                            Katbamna
                                                                                                                                                                                                                                                              Length 230;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 1669;
                                                                                                                                                                                                                                         Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Euteleostomi;
; Murinae; Rat
     Phasianinae;
                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                Rattus
                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                               99
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     60
                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           0;
```

```
RESULT P70165
ID P7 AC P7 O1 O1 DT 01 DT 01 DT 01 DT 01 DT 01 DT 02 CC GN CC SN Mt.
                                                                                                                        В
                                                                                                                                        QΥ
                                                                                                                                                             Вþ
                                                                                                                                                                               QУ
                                                                                                                                                                                                                                                     Q9NYC5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local S
Matches 55
                                                                                                                                                                                                               Query Match
Best Local
                                                                                                                                                                                                    Matches
        P70165;
01-FEB-1997 (T)
01-FEB-1997 (T)
01-MAY-2000 (T)
COLLAGEN TYPE 1
COLLAS.
                                                                                                                                                                                                                                                                                                                                                                                                                        Q9NYC5;
01-OCT-2000
01-OCT-2000
                                                                                                                                                                                                                                                     NON_TER
SEQUENCE
                                                                      P70165
                                                                                                                                                                                                                                                                                                  Colorado P.C., Torre A.,
Takahashi K., Volk R., Za
Ericksen M.B., Dhanabal M
Weichselbaum R.R., Sukhat
                                                                                                                                                                                                                                                                                                                                                                        Homo sapiens (Human).
Eukaryota; Metazoa; C
Mammalia; Eutheria; F
                                                                                                                                                                                                                                                                      EMBL; AF258349; AAF72630.1; -.
                                                                                                                                                                                                                                                                                                                                          SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                              01-OCT-2000 (TrEMBLrel. 15, 01-OCT-2000 (TrEMBLrel. 15, 01-OCT-2000 (TrEMBLrel. 15,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "Composition, synthesisasal lamina.";
Dev. Biol. 0:0-0(2000)
                                                                                                                                                                                                                                                                                 "Anti-angiogenic cues from vascular basement membrane collagen."; Cancer Res. 0:0\text{-}0(2000).
                                                                                                                                                                                                                                                                                                                                                               NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                                                                                                                                      ARRESTEN (FRAGMENT)
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Q9NYC5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Halfter W.M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NCBI_TaxID=9031;
                                                                                                                       100
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       850 SIRPFISRCSV 860
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              790
                                                                                                                                                             40
                                                                                                                                        61 ALEPYISRCTV
                                                                                                                                                                                                             Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                     1 QRAHGQDLGTLGSCLQRETTMPFLECNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 QRAHGQDLGTLGSCLQRETTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60
                                                                                                                       NIRPFISRCAV
                                                                                                                                                          ERAHGQDLGTAGSCLRKFSTMPFLFCNINNVCNFASRNDYSYWLSTPEPMPMSMAPITGE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ALEPYISRCTV 71
                                                                                                                                                                                                    55;
                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          FROM
                                                                                                                                                                                                                                                     229
                 (TrEMBLrel. (TrEMBLrel. (TrEMBLrel. PE IV ALPHA5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   979 AA;
                                                                    PRELIMINARY;
                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     synthesis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Dong
                                                                                                                                                                                                                                                     AA;
                                                                                                                                                                                                                                                                                                             Volk R., Zamborsky
Dhanabal M., Simon
                                                                                                                                        71
                                                                                                                                                                                                                                                                                                    R., Zamborsky E.D., Herman S. nabal M., Simons M., Post M., Sukhatme V.P., Kalluri R.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              :
:
                                                                                                                                                                                                                                                                                                                                                                          Chordata;
Primates;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    95020 MW;
                                                                                                                                                                                                                                                    25331 MW;
                                                                                                                                                                                                            82.3%;
77.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             83.3%;
                 02, Created)
02, Last sequence update)
13, Last annotation updat
CHAIN (FRAGMENT).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      and
                                                                                                                                                                                                                                                                                                                                Kamphaus G.D.,
                                                                                                                                                                                               Score 321; DB
Pred. No. 2.4e
9; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                              Last sequence update)
Last annotation updat
                                                                                                                                                                                                   9
                                                                                                                                                                                                                                                                                                                                                                                                                                   Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 325; DB Pred. No. 3.3e
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     assembly of
                                                                                                                                                                                                                                                                                                                                                                      Craniata; Vertebrata; Catarrhini; Hominidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                      PRT;
                                                                                                                                                                                                                                                   9693CDC100A5C1D5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    5B1017D911ED4299
                                                                                                                                                                                               e 321; DB 4; Le
i. No. 2.4e-33;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 e 325; DB 13; L
1. No. 3.3e-33;
                                                                    179
                                                                                                                                                                                                                                                                                                                                                                                                                                                      229
                                                                                                                                                                                                                                                                                                            Maeshima Y., Hopf
Herman S., Sarkar
Post M., Kufe D.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   the
                                                                    ΑA
                                                                                                                                                                                                                                                                                                                                                                                                                                                      A
                           update)
                                                                                                                                                                                                                                                                                                                                                                                                             update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     embryonic chick retinal
                                                                                                                                                                                                                     Length 229
                                                                                                                                                                                                                                                   CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length
                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                                                                                                                                                                                                                                                        Euteleostomi;
Homo.
                                                                                                                                                                                                                                                                                                                               Hopfer H.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       979;
                                                                                                                                                                                                                                                                                                                       P.K.,
                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0,
                                                                                                                                                                                                Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
```

musculus

(Mouse).

```
Q
                                    В
                                                                                                                                                                                                                                                                                                                                                                                                                                               Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SO PT
В
                                                     δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                         DR DR DR DR DR DR DR DR SQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Query Match
Best Local S
Matches 53
                                                                         Query Ma
Best Loc
Matches
                                                                                                                                                 developmental switches.";
J. Cell Biol. 127:879-891(1994).
EMBL; Z35168; CAA84531.1;
MGD; MGI:88456; CO14a5.
INTERPRO; IPRO00087;
INTERPRO; IPRO01442;
                                                                                                                                                                                                                                                                                                                               01-NOV-1996 (
01-NOV-1996 (
01-JUN-2000 (
PROCOLLAGEN,
                                                                                                                         NON_TER
SEQUENCE
                                                                                                                                                                                                                                                                                 COLAA5.

COLAA5.

Mus musculus (Mouse).

Mus musculus (Mouse).

Chordata;

Chordata;

Rodentia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Eukaryota;
                                                                                                                                                                                                                                 MEDLINE=95050957; PubMed=7962065; Miner J.H., Sanes J.R.;
                                                                                                                                                                                                                                                                                                                                                                               Q61436
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Oberbaeumer I.;
Submitted (OCT-1994)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    STRAIN-129;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Eukaryota; Metazoa; Mammalia; Eutheria; NCBI_TaxID=10090;
                                                                                                                                                                                                            "Collagen IV alpha 3, alpha 4, and alpha 5 laminae: sequence, distribution, association
                                                                                                                                                                                                                                                    TISSUE-MUSCLE;
                                                                                                                                                                                                                                                                               NCBI_TaxID=10090;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NON_TER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NON_TER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PFAM;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              INTERPRO;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                             SEQUENCE FROM N.A.
124
                 61
                                    64
                                                                                                                                                                                                                                                                                                                                                                                                                              77
                                                                                                                                                                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   17
                                                                                    Local
                                                                                                                                                                                                                                                                                                                                                                                                 13
                                                                                             Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QRAHGQDLGTLGSCLQRETTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR
                                                                                                                                                                                                                                                                                                                                                                                                                             SIQPFISRCAV
                                                                                                                                                                                                                                                                                                                                                                                                                                        ALEPYISRCTV
SIQPFISRCAV 134
                ALEPYISRCTV
                                    KRAHGQDLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMNMEPLKGQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             X82218; CAA57698.1;
PRO; IPRO01442; -.
                                                                                                                                            PF01413; C4; 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PF01413; C4; 2.
                                                                                   Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                               6 (TrEMBLrel. 01,
6 (TrEMBLrel. 01,
0 (TrEMBLrel. 14,
N, TYPE IV, ALPHA
                                                                                                                          253
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        179 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  179
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        81.8%; llarity 74.6%; Conservative 1
                                                                          Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                             87
                 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        179
19859
                                                                                                                         1
27626
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Chordata; Craniata; Vertebrata; Euteleostomi; Rodentia; Sciurognathi; Muridae; Murinae; Mus
                                                                                  81.8%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            .'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 to the
                                                                                                                          MW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ₩.
                                                                          12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 319; ив
Pred. No. 3.3e<sup>-</sup>
12; Mismatches
                                                                                                                                                                                                                                                                                                                              Last sequence update)
Last annotation update)
5 (COLLAGEN IV ALPHA 5 CHAIN) (FRAGMENT).
                                                                        Score 319; DB
Pred. No. 4.8e
L2; Mismatches
                                                                                                                                                                                                                                                                                                                                                            Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL/GenBank/DDBJ databases
                                                                                                                                                                                                                                                                                         Sciurognathi;
                                                                                                                                                                                                                                                                                                  Craniata; Vertebrata;
                                                                                                                          33DAA199CA59FA91
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        20A188F3687F582F
                                                                                                                                                                                                             association
                                                                                                                                                                                                                                                                                                                                                                                253
                                                                        DB 11;
..8e-33;
les 6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                DB 11;
.3e-33;
                                                                                                                                                                                                                                                                                                                                                                                Š
                                                                                                                                                                                                             chains
on with
                                                                                                                                                                                                                                                                                          Muridae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        6
                                                                                                                          CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CRC64;
                                                                                           Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 179;
                                                                                                                                                                                                                      'n
                                                                                                                                                                                                             laminins,
                                                                                                                                                                                                                                                                                                  Euteleostomi;
                                                                                                                                                                                                                       rodent
                                                                                                                                                                                                                                                                                          Murinae;
                                                                                            253;
                                                                         0;
                                                                                                                                                                                                                                                                                          Mus
                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                    123
                                                       60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0,
                                                                         0;
```

```
Вþ
                 Qy
                                                                                     밁
                                                                                                                                                                                                                                                                                                                             Qy
                                                                                                                                                                                                                                                                                                                                                  В
                                                                                                                                                                                                                                                                                                                                                                  Q
                                                                                                                                                                                                                                                                        Q9NUB7
                                                                                                                                                                                                                                                                                RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   RESULT
                                      Query Match
Best Local S
Matches 52
                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local S
                                                                                                                                                                                                                                                                                                                                                                                        Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                     NON_TER
NON_TER
SEQUENCE
                                                                                                                                                                                                          01-OCT-2000 (TrEMBLrel. 15, Created)
01-OCT-2000 (TrEMBLrel. 15, Last sequence update)
01-OCT-2000 (TrEMBLrel. 15, Last annotation update)
01-OCT-2000 (TrEMBLrel. 15, Last annotation update)
DA24A23.1 (COLLAGEN, TYPE IV, ALPHA 5 (ALPORT SYNDROME))
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Thorner P.S., Zheng K., Kalluri R., Jacobs R., Hudson B.G.; "Coordinate gene expression of the alpha3, alpha4, and alpha5 of collagen type IV. Evidence from a canine model of x-linked nephrittis with a COL4A5 gene mutation."; J. Biol. Chem. 271:13821-13828(1996).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Canis familiaris (Dog). '
Eukaryota; Metazoa; Chordata; (
Mammalia; Eutheria; Carnivora;
                                                                                              EMBL; AL035425;
Collagen.
NON_TER 1
                                                                                                                                                                        Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                                             Q9NUB7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          01-NOV-1996
01-MAY-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Q28271;
01-NOV-1996
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Q28271
                                                                                     SEQUENCE
                                                                                                                           Submitted
                                                                                                                                     Cobley
                                                                                                                                             SEQUENCE
                                                                                                                                                               NCBI_TaxID=9606;
                                                                                                                                                                                            Homo sapiens (Human)
                                                                                                                                                                                                       COL4A5
                                                                                                                                                                                                                                                     Q9NUB7;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PFAM;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=96278820; PubMed=8662866;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STRAIN-SAMOYED;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COLLAGEN TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            INTERPRO;
  697
                                                                                                                                                                                                                                                                                                              106 NIRPFISRCAV 116
                                                                                                                                                                                                                                                                                                                                                15
                                                                                                                                                                                                                                                                                                                              61 ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   14
PRO; IPRO01442; -. PF01413; C4; 2.
                                      | Similarity
| 52; Conser
                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                             FROM N.A.
                                                                                                                 (FEB-2000) to :
35425; CAB90289
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              5 (TremBLrel. 01
0 (TremBLrel. 13
                                                                                                                                                                                                                                                                                                                                                                                                                                     225
225 AA;
                                                                                     886 AA;
                                       Conservative
                                                                                                                                                                                                                                                                                                                                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PRELIMINARY;
                                                                                                                                                                                                                                                              PRELIMINARY;
                                                                                                                                                                                                                                                                                                                                                                                                                                      225
24586
                                                                                                                                                                         Chordata;
Primates;
                                                                                    1
85478
                                              80.5%;
                                                                                                                                                                                                                                                                                                                                                                                               80.5%;
76.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        01, Created)
01, Last sequence update)
13, Last annotation updat
                                                                                                                 the
9.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CHAIN (FRAGMENT)
                                                                                                                                                                                                                                                                                                                                                                                                                                       WW;
                                                                                     MW;
                                       13;
                                                                                                                                                                                                                                                                                                                                                                                       9;
                                                                                                                         EMBL/GenBank/DDBJ
                                      Score 314; DB 4; 1
Pred. No. 7.6e-32;
3; Mismatches 6;
                                                                                                                                                                                                                                                                                                                                                                                      Score 314; DB 6;
Pred. No. 1.8e-32;
9; Mismatches 8;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Craniata; Ve; Fissipedia;
                                                                                                                                                                         Craniata; V
Catarrhini;
                                                                                                                                                                                                                                                              PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRT;
                                                                                     8C06B9FCA9AA6569
                                                                                                                                                                                                                                                                                                                                                                                                                                       2196455890416E47
                                                                                                                                                                                                                                                              886
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                225
                                                                                                                                                                         Vertebrata;
i; Hominidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Vertebrata;
ia; Canidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                B
                                                                                                                                                                                                                                                              A
A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          update)
                                                                                                                          databases
                                                        Length 886
                                                                                     CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                      CRC64;
                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Euteleostomi;
Canis.
                                                                                                                                                                                   Euteleostomi;
                                       0;
                                                                                                                                                                                                                                                                                                                                                                                       0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          chains
                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                      0;
                                                                                                                                                                                                                                                                                                                                                                                       0,
```

Qy 61 ALEPYISRCTV 71
:::::::|:|| |
Db 757 SIQPFISRCAV 767

Search completed: April 13, 2001, 15:45:38
Job time: 316 sec

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                Database :
                                                                                                                                                                                                                                                                                                                                                              Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                             Minimum DB seq length: 0
Maximum DB seq length: 2000000000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Title:
Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                       Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                            Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Run on:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           OM protein · protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Sequence:
  Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                      number of hits satisfying chosen parameters:
 Score
                                                                                                                                                                                                                                                                          Match
 BLOSUM62
Gapop 10.0 , Gapext 0.5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          April 13, 2001, 15:46:04; Search time 20.87 Seconds (without alignments) 116.538 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     US-09-543-371-10_COPY_54_124
390
                                                                                                                                                                                                                                                                                                                                                SwissProt_39:*
                                                                                                                                                                                                                                                                                                                                                                                                                                     93435 seqs, 34255486 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GenCore version 4.5 Copyright (c) 1993 - 2000 Compugen Ltd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        QRAHGQDLGTLGSCLQRFTT.....MNMAPITGRALEPYISRCTV
                                                                                                                                                                                                                                                                          Length
 DВ
                                                             CA34_HUMAN
CA34_BOVIN
CA14_MOUSE
CA54_CANFA
CA54_CASSU
CA24_ASCSU
CA24_ASCSU
CA24_MOUSE
CA24_HUMAN
CA24_HUMAN
CA44_HUMAN
CA44_BOVIN
CA44_BOVIN
CA44_BOVIN
CA44_BOVIN
CA44_RASPNG
CA14_DROME
ABFA_ASPNG
CA14_DROME
ABFA_ASPNG
CA14_DROME
ABFA_ASPNG
CA14_DROME
ABFA_ASPNG
CA14_DROME
ABFA_BCSCHPO
AMPM_MANSE
NCR2_HUMAN
CMO_PYRFU
RRPI_EBOSM
YMF7_ECOLI
PANE_HAEIN
LKHA_CAVPO
SYIC_SCHPO
LKHA_RAT
                       GP63_LEICH
PLMN_ERIEU
RPM2_YEAST
UT2_HUMAN
UT2_RABIT
                                                                                                                                                                                                                                                                                                  SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                       93435
       P42254
Q94618
Q9y618
Q9y618
Q51741
Q651741
Q64359
P12994
P22994
P44963
P14963
Q29485
Q29485
Q15849
Q158849
P19602
                                                                                                                                     P08572
Q14031
P53420
Q29442
P55787
P08120
                                                                                                                                                                                                                                                 Q01955 homo sapien
Q28084 bos taurus
                                                                                                                                                                                                                                                                          Description
      1 pyrococcus
2 ebola virus
9 saccharomyc
4 escherichia
3 haemophilus
5 leishmania
5 erinaceus e
9 saccharomyc
9 homo sapien
4 oryctolagus
2 cavia porce
1 schizosacch
                                                                                                                                    1 homo sapien
) homo sapien
2 bos taurus
7 oryctolagus
) drosophila
                                                                                                                                                                                          homo sapien
sascaris suu
caenorhabdi
caenorhabdi
                                                                                                                                                                           mus musculu
homo sapien
                                                                                                                                                                                                                           mus musculu
canis famil
                                                                                                                     aspergillus
schizosacch
                                                                                                                                                                                                                                 homo sapien
mus musculu
                                                                                                     manduca sex
h nuclear r
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             71
```

		44 53.5	43 53.			40 54.5	-	38 5	37 5	36 5	35 5	34 55.5	
			5 13.7					5 14.1	5 14.1	5 14.1	5 14.1		
	1237	1237	776	610	397	520	3898	929	389	300	107	666	
	1	<u> </u>	_	_	_	Н	_	_	ᆫ	1	1	1	
ALIGNMENTS	B3A2_RABIT	B3A2_MOUSE	POLG_LANVY	LKHA_MOUSE	UT2_RAT	CCB4_HUMAN	POLG_HCVA	B3AT_MOUSE	UT1_HUMAN	ERF5_ARATH	URE2_ECOLI	CO14_BRAJA	
	P48746 oryctolagus	P13808 mus musculu	P29838 langat viru		Q62668 rattus norv	٠.	P19712 hog cholera	w	Q13336 homo sapien	O80341 arabidopsis	Q03283 escherichia	P98057 bradyrhizob	

R R R R R R R R R R R R R R R R R R R	R R R R R R R R R R R R R R R R R R R	R R R R R R R R R R R R R R R R R R R	RAP RAP RAP RAP RAP RAT RAT RAT RAT	R R R R R R R R R R R R R R R R R R R	RESU CA34.4 ID AC AC DT DT DT DT DT CS OC
SEQUENCE OF 1644-1670 FROM N.A. TISSUE-Kidney; Ding J.; Submitted (JAN-1993) to the EMBL/GenBank/DDBJ databases. [7]					RESULT 1 CA34_HUMAN CA34_HUMAN STANDARD; PRT; 1670 AA. AC 001955; DT 01-OCT-1996 (Rel. 34, Created) DT 15-JUL-1999 (Rel. 38, Last sequence update) DT 01-OCT-2000 (Rel. 40, Last annotation update) DE COLLAGEN ALPHA 3(IV) CHAIN PRECURSOR. COL4A3. OS Homo sapiens (Human). CC BUKARYOta; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; OC Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo. NCBL_TaxID=9606; RN (11)

SEQUENCE OF 1439-1670, AND ALTERNATIVE SPLICING TISSUE-Kidney;

PubMed=8294492;

MEDLINE=94124597;

modified and this statement is not removed

```
"Mutations in the type IV collagen alpha 3 (COL4A3) gene in autos recessive Alport syndrome.";
Hum. Mol. Genet. 3:1269-1273(1994).
-i- FUNCTION: TYPE IV COLLAGEN IS THE MAJOR STRUCTURAL COMPONENT GLOMERULAR BASEMENT MEMBRANES (GBM), FORMING A 'CHICKEN-WIRE' MESHWORK TOGETHER WITH LAMININS, PROTEOGLYCANS AND ENTACTIN/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "The human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ALTERNATIVE SPLICING MEDLINE=93280184; Pu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                alpha4(IV) collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Momota
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE OF 1-29 | MEDLINE=98196854;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               "Alternative splicing of the NC1 domain of the human alpha 3(IV) collagen gene. Differential expression of mRNA transcripts that predict three protein variants with distinct carboxyl regions."; Biol. Chem. 269:2342-2348(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        predict
                                              This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Momota R., S
Ninomiya Y.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ---
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Barrientos A.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 VARIANT PRO-1474.
MEDLINE=95078827;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      spiiced
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8
                                                                                                                                                                                                                                                 +
                                                                                                                                                                                                                                                                                                                                        ÷
                                                                                                                                                                                                                                                                                                                                                                                  -
                                                                                                                                                                                                                                                                                                                                                                                                                         +
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        --
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Lemmink
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "Two genes,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Biol. Chem.
                                                                                                                                                                                                                                                                                                                                                      COCHLEA, LUNG AND BRAIN.

DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS DOMAIN: ALPHA CHAINS OF THE IT CTERMINUS, FREQUENT INTERRUPTIONS OF THE GAX'Y REPEATS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH M CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL TRIPLE-HELICAL 75 DOMAIN.

TRIPLE-HELICAL 75 DOMAIN.

PTM: PROLINES AT THE THIRD POSITION OF THE TRIPEPTIDE REPEATING POMIT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS.

PTM: THE ALTERNATIVE SPLICED FORM V CONTAINS AN ADDITIONAL N-LINKED GLYCOSYLATION SITE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SUBCELLULAR LOCATION: CELL SURFACE (POTENTIAL)
ALTERNATIVE PRODUCTS: AT LEAST 3 ISOFORMS; 1 (:
3/L5; ARE PRODUCED BY ALTERNATIVE SPLICING. THI
C-TERMINAL NC1 DOMAINS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      NIDOGEN.
SUBUNIT:
s SWISS-PROT entry is copyright. It is produced through ween the Swiss Institute of Bioinformatics and the EN European Bioinformatics Institute. There are no restr
                                                                                                                                                                            DISEASE: ANTIBODIES AGAINST THE NC1 DOMAIN OF ALPHA3(IV) MEDIATE THE HUMAN AUTOIMMUNE DISEASE, GOODPASTURE SYNDROME, WHICH IS CHARACTERIZED BY HEMATURIA AND PULMONARY HEMORRHAGE. DISEASE: DEFECTS IN COL4A3 ARE ASSOCIATED WITH THE TYPE I
                                                                                                                                                                                                                                                                   PTM: TYPE IV COLLAGENS CONTAIN NUMEROUS CYSTEINE RESIDUES ARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULFIDE BONDIN THESE, LOCATED IN THE NC1 DOMAIN, ARE CONSERVED IN ALL KNC IV COLLAGENS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TISSUE SPECIFICITY: ALPHA 3 AND COLOCALIZED AND PRESENT ONLY IN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SUBUNIT: THERE ARE SIX TYPE IV COLLAGEN ISOFORMS, ALPHA 1(IV) ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELIX STRUCTURE WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN NETWORK.
                                                                                                                                   AUTOSOMAL RECESSIVE FORM OF ALPORT GLOMERULONEPHROPATHY CHARACTERIZED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           human mRNA encoding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Lett.
                                                                                         MALES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            H.H., Mochizuki T.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 S.T., Smeets H
                                                                                            AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       424:11-16(1998).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Sugimoto
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Quinones
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COL4A3
                                                                                            FEMALES
                                                                                                                AND DEAFNESS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Monnens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    268:12090-12094(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PubMed=7987301;
hizuki T., van den Heuvel L.P.W.J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PubMed=8505332;
es S., Saus J.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PubMed=9537506;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          and COL4A4 coding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 :
:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                chains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   L.A.H., van
.J.M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Oohashi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Saus J.;
the Goodpasture antigen is
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            4A4 coding for the human alpha3(IV) are arranged head-to-head on chromo
                                                                                                                THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Τ.,
                                                                                                              ALPORT SYNDROME, AN HEREDITARY TERIZED BY PROGRESSIVE RENAL FA RECESSIVE FORM OCCURS EQUALLY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ALPHA 4 T
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Kigasawa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TYPE IV CO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ×.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Brunner
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 (SHEY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ٧I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (SHOWN HERE),
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               alternatively
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COLLAGENS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Schroeder C.
                                                                                                                EQUALLY BETWEEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 OF.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     chromosome
                                                                                                                                                                                                                                                                                                                 BONDING.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ξ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KIDNEY,
                                                  Ø
                                                                                                                                                                                                                                                                                               KNOWN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              autosomal
                                                                                                                                     FAILURE,
                                                                                                                                                                                                                                                                                             S WHICH
ING. 12 OF
NOWN TYPE
                                                collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2/V A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EYE,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MAY
                                                                                                                                                                                                                                                                                                                    ç
```

the

уd

Long There

are

content

restrictions tent is in

no on

its way

γQ

ш

Similarity

.0%;

0;

Mismatches

0;

0;

Gaps

0;

Conservative

QRAHGQDLGTLGSCLQRFTTMFFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60

EMBL outstation

between

```
Query Match
Best Local S
Matches 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                       CARBOHYD
MOD_RES
MOD_RES
DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CHAIN
DOMAIN
DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MIM;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EMBL;
EMBL;
EMBL;
EMBL;
EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EMBL;
EMBL;
                                                                               CONFLICT
CONFLICT
CONFLICT
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                            DISULFID DISULFID VARSPLIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MIM;
                                                                                                                                                                                                                                                                                                                                                                                                         DISULFID DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Extracellular matrix; Connective tissue; Repeat; Hydroxylation; Glycoprotein; Basement membrane; Collagen; Signal; Cell adhesio
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              or send
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               entities requires
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pfam;
                                                                                                                                                               VARIANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Alternative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pfam;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    InterPro;
                                                                                                                                                                                                 VARIANT
                                                                                                                                                                                                                                                                                                VARSPLIC
                                                                                                                                                                                                                                                                                                                                                                                                                                           DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 203780;
233450;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               X80031; CAA56335.1; M92993; AAA21610.1; AB1993; AAB19637.1; AB19637.1; AB19630; AAA52044.1; ABA18942.1; U02529; AAA18943.1; U02529; AAA18943.1; AB18943.1; AB18943.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  120070;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               U02520; AA
AB008495;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PF01391; Collagen; 21.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PF01413; C4; 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              s requires a license agreement (S an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IPR000087;
IPR001442;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         791
996
1154
1306
1345
1432
                                                                                                                                                                                                                                                                                                1488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1439
                                                                               1539
1594
1663
1670
                                                                                                                                                               1495
                                                                                                                                                                                                 1474
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          253
1435
1437
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1426
                                                                                                                                                                                                                                                                                                                                                             1460
1493
1505
1570
1604
1586
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 splicing; Polymorphism;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    BAA25064.1;
                                                                                 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1670
42
1438
                                                                                                                                                                                                                                                                                                1670
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1444
                                                                                                                                                                                                                                                                                                                                                             1434
253
1435
1437
1551
1548
1511
1665
1662
1662
1670
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1427
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1670
                                                                                                  1664
                                                                                                                1539
1594
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       793
998
1156
1308
1347
                                                                                                                                                                                               1474
                                                                                                                                                                  1495
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 2.2
               100
                                                                                   161740
                                   0%;
                                                                                                                                                                                                                                             OR 1662 (BY SIMILARITY).

OR 1665 (BY SIMILARITY).

OR 1665 (BY SIMILARITY).

BY SIMILARITY

BY SIMILARITY

ETSAGSECTGOALASPGSCLEEFRASPFLECHGRGTCNYS

NSYSTMLASLAPERMFRKPIPSTVKAGELEKIISRCOVUMK

KRH -> KAYSINCESMGIRKNNKSLSGVHEERTLKKKTA

ELVFFILKNKVMTEHAVI (IN ISOFORM 2).

GTLGSCLQRFTTMPFLECNVRDYCHFASRNDYSYMLSTPAL

MPMNMAPITGRALEPYISRCTVCEGPAIAIAVHSOTTDIPP

CPHGWISLMKGPSFIMFTSAGSECTGOALASPGSCLEEFRA

SPFLECHGRGTCNYYSNSYSFMLASLAPERMFRPIPSTVK
                                                                               QV
WW;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CELL
                                                                               /FTId=VAR_001909.

R -> I (IN REF. 7).

T -> A (IN REF. 4).

OV -> HL (IN AAA52044 AND REF.
OW; 9B95708AF399BEAE CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                          PHOSPHORYLATION (BY SIMILARITY).
PHOSPHORYLATION (BY SIMILARITY).
OR 1548 (BY SIMILARITY).
OR 1551 (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ANTIBODIES).
CLEAVAGE (BY COLLAGENASE)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NONHELICAL REGION (NC1)
ANTIGEN) (BY SIMILARITY)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    7S DOMAIN.
TRIPLE-HELICAL REGION
                                                                                                                                                                  O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COLLAGEN ALPHA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       POTENTIAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N-LINKED (GLCNAC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (BY
                                                                                                                                                                                  /FTId=VAR_001908
                                                                                                                                                                                                                                   AGELEKIISRCQVCMKKRH
             Score 390; DB 1
Pred. No. 8e-39;
                                                                                                                                                                    v
                                                                                                                                                                                                    'n
                                                                                                                                                                                                                                                                                                                                                                                                                              SIMILARITY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    L ATTACHMENT SITE (
)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SIMILARITY)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Phosphorylation.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (RECOGNIZED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               noved. Usage by and for commercial
(See http://www.isb-sib.ch/announce/
                                   <del>.</del>.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       (NC1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ВУ
                                Length
                                                                                                                                                                                                                                   v
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (POTENTIAL)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (POTENTIAL)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (POTENTIAL)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GOODPASTURE
                                                                                                                                                                                                                                 DALFVKVLRSP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (GOODPASTURE
                                   1670;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       adhesion;
                                                                                                    <u>6</u>
```

В

1480.

QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 1539

```
Š
                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        01-NOV-1997 (Rel. 35,
01-NOV-1997 (Rel. 35,
01-NOV-1997 (Rel. 35,
COLLAGEN ALPHA 3(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CA34_BOVIN
Q28084;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             LT 2
_BOVIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1540
                                                                                                                                  + +
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE=91093146; PubMed=1985905;
Morrison K.E., Germino G.G., Reeders S.T.;
"Use of the polymerase chain reaction to clon
encoding the bovine alpha 3 chain of type IV
J. Biol. Chem. 266:34-39(1991).
            ÷
                                                        -
                                                                                                                                                                                                                                            membrane collagen."
                                                                                                                                                                                                                                                                      Hudson B.G.;
                                                                                                                                                                                                                                                                                MEDLINE=87222419; PubMed=2438283;
Butkowski R.J., Langeveld J.P.M.,
                                                                                                                                                                                                                                                                                                                                                                                                                      alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Bovidae; Bovinae; Bos.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           викатуота; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COL4A3.
                                                                                                                                                                                                                           +
                                                                                                                                                                                                                                    J. Biol.
                                                                                                                                                                                                                                                                                                       SEQUENCE OF 227-244
                                                                                                                                                                                                                                                                                                                                        "Identification of the of collagen IV.";
                                                                                                                                                                                                                                                                                                                                                               Saus
                                                                                                                                                                                                                                                                                                                                                                        MEDLINE=88330844; PubMed=3417661;
                                                                                                                                                                                                                                                                                                                                                                                                                                            Gunwar S., Saus
                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE=90202779; PubMed=2318822;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TISSUE-Kidney;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TISSUE-Lens;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NCBI_TaxID=9913;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Bos taurus (Bovine)
                                                                                                                                                                                                                                                        *Localization of the Goodpasture epitope
                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE OF
                                                                                                                                                                                                                                                                                                                                                                                                        "Glomerular basement membrane. Ider
alpha 4, of type IV collagen.";
J. Biol. Chem. 265:5466-5469(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE OF 227-258.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             61
         THESE, LOCATIV COLLAGENS
                                                                                                                                                    SUBUNIT: THERE ARE SIX TYPE IV COLLAGEN ISOFORMS, ALPHA 1(IV) ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELIX STRUCTURE WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN NETWORK.
                                                                                    SUBCELLULAR LOCATION: CELL SURFACE (POTENTIAL).

DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS

DOMAIN (NC1) AT THEIR C-TERNINUS, FREQUENTAVE A NONCOLLAGENOUS

G-X-Y REPEARS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH N

CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL

TRIPLE-HELICAL 7S DOMAIN.
                                          PTM: PROLINES AT THE THIRD POSITION OF THE TRIPEPTIDE REPE
UNIT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS
PTM: TYPE IV COLLAGENS CONTAIN NUMEROUS CYSTEINE RESIDUES
ARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULFIDE BONDIN
                                                                                                                                                                                             3101. Chem. 262:7874-7877(1987).
FUNCTION: TYPE IV COLLAGEN IS THE MAJOR STRUCTURAL COMPONENT GLOMERULAR BASEMENT MEMBRANES (GBM), FORMING A 'CHICKEN-WIRE MESHWORK TOGETHER WITH LAMININS, PROTEOGLYCANS AND ENTACTIN/
                                                                                                                                                                                          NIDOGEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ALEPYISRCTV 1550
                      COLLAGENS
                                                                                                                                                                                                                                                                                                                                                               Wieslander
                                                                                                                                                                                                                                                                                                                             Chem.
                                 LOCATED IN
                                                                                                                                                                                                                                                                                                                             263:13374-13380(1988)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                            ٠
.
           TO OTHER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     355
                                                                                                                                                                                                                                                                                                                                                                                                                                            Noelken
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Chordata; Craniata; Vertebrata; Euteleostomi; Cetartiodactyla; Ruminantia; Pecora; Bovoidea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         , Last
, Last
CHAIN
                                 THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Created)
                                                                                                                                                                                                                                                                                                                                                  Goodpasture antigen
                                                                                                                                                                                                                                                                                                                                                               Langeveld J.P.M.,
           TYPE
                                 NC1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        sequence update) annotation update) (FRAGMENT).
                                                                                                                                                                                                                                                                                                                                                                                                                                           М.
Е.,
           ۷Ι
                                DOMAIN,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                               E., Hudson B.G. Identification
           COLLAGENS
                                                                                                                                                                                                                                                                                                                                                                                                                                          Hudson
                                                                                                                                                                                                                                                                                 Wieslander
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                471
                                ARE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    to clone and sequence
                                                                                                                                                                                                                                                           to a novel chain of basement
                                                                                                                                                                                                                                                                                                                                                              Quinones S.,
                                 CONSERVED
                                                                                                                                                                                                                                                                                                                                                   as
                                                                                                                                                                                                                                                                                                                                                                                                                                           .
ດ
;
                                                                                                                                                                                                                                                                                J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           collagen.";
                                                                                                                                                                                                                                                                                                                                                   the
                                                                                                                                                                                                                                                                                                                                                                                                                               of a
                                                                                                                                                                                                                                                                                 Hamilton
                                                                                                                                                                                                                                                                                                                                                   alpha
                                                                                                                                                                                                 'CHICKEN-WIRE'
                                                                                                                                                                                                                                                                                                                                                                                                                               fourth
                                                                                                                                                                                                                                                                                                                                                               Hudson
                                           BONDING.
                                                                  CHAINS
                                                                                                                                                                                                                                                                                                                                                   3(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Bovoidea;
                                                                           REPEATING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       מם
                                           WHICH
                                                                                                                                                                                                                                                                                                                                                  chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CDNA
                                 12 OF
TYPE
                                                                                                                                                                                                                          Q.
                                                                                                            MAY
                                                                                                                                                                                                                                                                                                                                                                       Š
                                                                                                                                                                                                                                                                                                                                                                                              멍
RREPRESENTATION
                                                                                                                                                                                                                                                                                                                                                   В
                                                                                                                                                                                                                                                                                                                                                                                                                 δÃ
```

```
RESULT 3
CA14_HUMAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                            Matches
                                                                                                                                                                                                                                   21-JUL-1986
01-FEB-1996
01-OCT-2000
COLLAGEN ALPI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DISULFID
DISULFID
DISULFID
DISULFID
CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DISULFID DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DOMAIN
SITE ·
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   the European Bioinformatics Institute. There are no rest
use by non-profit institutions as long as its content
modified and this statement is not removed. Usage by an
          Soininen R., Haka-Risku T., Prockop "Complete primary structure of the a membrane (type IV) collagen."; FEBS Lett. 225:188-194(1987).
                                                                                                          Soininen R., Huotari M., Ganguly A., "Structural organization of the gene type IV collagen.";
                                                                                                                                                                                                                                                                                 CA14_HUMAN
P02462;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Pfam;
FEBS
                                                                             SEQUENCE
                                                                                                                                           SEQUENCE FROM N.A. MEDLINE=89340433; PubMed=2701944;
                                                                                                                                                                                       Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                           COL4A1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Extracellular
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pfam;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EMBL; M63139; AAA62708.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          between
                                                      MEDLINE=88083584; PubMed=3691802;
                                                                                                                                                                           NCBI_TaxID=9606;
                                                                                                                                                                                                              Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MOD_RES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        InterPro;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 InterPro;
                                                                                       [2]
                                                                                                                                                                                                                                                                                                                                                     341
                                                                                                                                                                                                                                                                                                                                                                                                281
                                                                                                                                                                                                                                                                                                                                                                                                                                                     Local
                                                                                                                                                                                                                                                                                                                                                                          61 ALEPYISRCTV
                                                                                                  Biol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SWISS-PROT entry is copyright. It is produced through a collaboration een the Swiss Institute of Bioinformatics and the EMBL outstation -
                                                                                                                                                                                                                                                                                                                                                                                                           QRAHGQDLGTLGSCLQRFTTMPELFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR
                                                                                                                                                                                                                                                                                                                                                     ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                EQAHGQDLGTLGSCLQRFTTMPFLFCNINDVCNFASRNDYSYWLSTPAMIPMDMAPITGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PF01391;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PF01413; C4;
                                                                                                                                                                                                                                   1996 (Rel. 33,
2000 (Rel. 40,
ALPHA 1(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                             ę
                                                                                                  Chem.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               requires a license agreement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        IPR001442;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  IPR000087;
                                                                             46-1257
                                                                                                                                                                                                                                                          (Rel. 01, Created) (Rel. 33, Last seq
                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                              (Human)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      matrix;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Collagen;
                                                                                                 264:13565-13571(1989).
                                                                                                                                                                                                                                                                                             STANDARD;
                                                                                                                                                                                                                                                                                                                                                     351
                                                                                                                                                                                                                                                40,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            238
471
108
232
232
238
352
349
349
312
466
463
423
                                                                                                                                                                                        Chordata;
Primates;
                                                                             FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  47585
                                                                                                                                                                                                                                     CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                     95.1%;
91.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Connective
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           membrane;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  4
                                                                             N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WW;
                                                                                                                                                                                                                                     annotation update)
PRECURSOR.
                                                                                                                                                                                                                                                           sequence update)
                                                                                                                                                                                                                                                                                                                                                                                                                                           6,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        NONHELICAL REGIO
CELL ATTACHMENT
HYDROXYLATION.
HYDROXYLATION.
                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 371; DB 1;
Pred. No. 4.1e-37;
6; Mismatches 0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            OR OR OR OR OR OR OR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     TRIPLE-HELICAL
                                                                                                                                                                                       Craniata; Vertebrata; Catarrhini; Hominidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 C03B66F14E7008DE CRC64;
                                                                                                                      gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SIMILARITY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   349 (BY SIMILARITY).
352 (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SIMILARITY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           tissue; Repeat; Hydroxylation; Collagen; Cell adhesion.
                               alpha
                                            D.J.,
                                                                                                                                                                                                                                                                                             1669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (BY SIMILARITY). (BY SIMILARITY).
                                                                                                                      Prockop D.J., for the alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           There are no restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REGION (NC1)
                                , Tryggvason
1-chain of
                                                                                                                                                                                                                                                                                            A
                                                                                                                                                                                         Hominidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     REGION
                                                                                                                                                                                                                                                                                                                                                                                                                                           0
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (POTENTIAL)
                                                                                                                      Tryggvason
1 chain of
                                 human
                                                                                                                                                                                        Euteleostomi;
; Homo.
                                            ~
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         and
                                 basement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     is
                                                                                                                                                                                                                                                                                                                                                                                                                                           0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         for
                                                                                                                       human
                                                                                                                                                                                                                                                                                                                                                                                                                                           Gaps
                                                                                                                                                                                                                                                                                                                                                                                                 340
                                                                                                                                                                                                                                                                                                                                                                                                                     60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              9
                                                                                                                                                                                                                                                                                                                                                                                                                                           0
```

OF 1-943

FROM

N.A.

```
Siebold B., Deutzmann R., Kuehn K.;

"The arrangement of intra- and intermolecular disulfide bonds in a carboxyterminal, non-collagenous aggregation and cross-linking do of basement-membrane type IV collagen.";

Eur. J. Biochem. 176:617-624 (1988).

-I- FUNCTION: TYPE IV COLLAGEN IS THE MAJOR STRUCTURAL COMPONENT GLOMERULAR BASEMENT MEMBRANES (GBM), FORMING A 'CHICKEN-WIRE' MESHWORK TOGETHER WITH LAMININS, PROTEOGLYCANS AND ENTACTIN/
                                                       -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Soininen R., Huotari M., Hostikka S.L., Prockop D.J., Tryggvason K., "The structural genes for alpha 1 and alpha 2 chains of human type IV coilagen are divergently encoded on opposite DNA strands and have an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE OF 1259-1669
MEDLINE-85216555; Pub
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "cDNA clones coding for the pro-alphal(IV) chair procollagen reveal an unusual homology of amino halves of the carboxyl-terminal domain.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         amino-acid sequence of a 914-residue-long alpha 1(IV) chain.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         "Amino acid sequence of th
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE OF 1-94 TISSUE=Placenta;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE=89005112; PubMed=2844531;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TISSUE-Placenta;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              procollagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Pihlajaniemi T., Tryggvason K., Myers
Cheung M.-C., Prockop D.J., Boyd C.D.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE OF 1256-1
MEDLINE=85207819;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          "Structure of human-basement-membrane (type IV) collagen. Complanino-acid sequence of a 914-residue-long pepsin fragment from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Babel W., Glanville
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE=85003629;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           region (7S domain) of the membrane collagen.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE OF 28-243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE OF 1441-1669,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         overlapping
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE=89034231;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE OF 1-28 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Proc. Natl.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Kefalides
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Brinker
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE OF 534-1447
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE=86004708;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "Completion of the amino acid sequence of the alpha 1 chain of basement membrane collagen (type IV) reveals 21 non-triplet interruptions located within the collagenous domain.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Deutzmann R., Kuehn K.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDLINE=88029471; PubMed=3311751;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Restricted
NIDOGEN.
SUBUNIT: THERE ARE SIX TYPE IV COLLAGEN ISOFORMS, ALPHA 1(IV)-
ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELIX STRUCTURE
WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN NETWORK.
DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS
DOMAIN (NC1) AT THEIR C-TERMINUS, FREQUENT INTERRUPTIONS OF THE
G-X-Y REPEATS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH
CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL
TRIPLE-HELICAL 7S DOMAIN.

TRIPLE-HELICAL 7S DOMAIN
UNIT,ARE HYDROXYLATED IN ALL CASES AND BIND CARBOHYDRATE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          J.M., Gudas L.J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Biochem.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Biochem.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Chem.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        OF 1256-1669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N.A., Myers
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Oberbaeumer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 promoter region.";
em. 263:17217-17220(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Acad.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              chains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               homology between human alpha 1 type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      260:7681-7687(1985).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  43.
;; PubMed=4043082;
Qian R.Q., Siebold B., Ri
conce of the N-terminal according to the N-terminal according to the N-terminal according to the N-terminal (IV) c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 152:213-219(1985).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      168:529-536(1987).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 143:545-556(1984).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PubMed-3182844;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1669 FROM N.A.
PubMed=2582422;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1669 FROM N.A.
PubMed=2581969;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Sci. U.S.A. 82:3649-3653(1985)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PubMed=6434307;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               R.W.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            J.C.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AND DISULFIDE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Loidl H.R.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Dieringer H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     BONDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Wang
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       J.С.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               aggregation chain of hum
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Risteli J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Babel W.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ß
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       chain of human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Kurkinen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ۷Ι
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Rosenbloom
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Kuehn K.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 and other
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Glanville
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Χ.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    sequences
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    cross-linking
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Lebo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Complete
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     R.W.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ₽.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              the
                                                                                                                                           THE
                                                                                                                                                                                                                                                                                                                                                                                                    domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            human
                                                                                                                                                                                                                                                                                                                                e
H
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    two
                                                                                                                      MAY
```

```
TITITE TO COCCACA CAN ARRANGE AND COLOUD COL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        entities requires a or send an email to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         use
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      between
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PTM: PROLINES AT THE THIRD POSITION OF THE TRIPEPTIDE REPEAULT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS.
PTM: TYPE IV COLLAGENS CONTAIN NUMEROUS CYSTETNE PROCESSION OF THE CHAINS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              European Bioinformatics Institute.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IV COLLAGENS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SWISS-PROT entry is copyright. It is produced through sen the Swiss Institute of Bioinformatics and the EM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      : TYPE IV COLLAGENS CONTAIN NUMEROUS CYSTEINE RESIDUES WHICH
INVOLVED IN INTER- AND INTRAMOLECULAR DISULFIDE BONDING. 12 OF
SE, LOCATED IN THE NC1 DOMAIN, ARE CONSERVED IN ALL KNOWN TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           and this statement is not removed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      non-profit
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      license agreement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   institutions as long
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                (See http://www.isb-sib
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              There are no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   as
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   its content
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EMBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              REPEATING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              þ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   .ch/announce,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              commercial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   way
```

PROPEP CHAIN Repeat; EMBL; EMBL; EMBL; Extracellular matrix; Connective tissue; Basemu Repeat; Hydroxylation; Glycoprotein; Collagen; Pfam; PF01413; C4; 2. Pfam; PF01391; Collagen; EMBL; DOMAIN EMBL; nterPro; S16876; 120130; X05561; M10940; M11315; M26576; J04217; M26536 M26557 ; Hydroxylation; (1 27 1 27 28 172 173 1669 173 1440 M2654 M2656 M2656 M26556; M26548 IPR001442; IPR000087; -. CGHU4B AAA53098 JOINED
JOINED JOINED
JOINED
JOINED
JOINED
JOINED
JOINED
JOINED JOINED JOINED JOINED JOINED. JOINED. JOINED. JOINED. JOINED JOINED JOINED AMINO-TERMINAL E COLLAGEN ALPHA 1 TRIPLE-HELICAL F Basement 1(IV) PROPERTIDE (7S DOMAIN). Signal. CHAIN membrane

```
ρ
                                                                                                                                                                                                                                                                                                  밁
                                                                                                                                                                                                                                                                                                             δô
                                                                                                                                                                                                                                                                      밁
Nath P., Laurent M., Horn E., So
"Isolation of an alpha 1 type-IV
gene 43:301-304(1986).
                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local
                                                                                                                                                                                                       P02463;
21-JUL-1986 (
01-FEB-1991 (
15-JUL-1999 (
                                                                                                                                                                                                                                                                                                                                                               CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                           CONFLICT
CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DOMAIN
CARBOHYD
DISULFID
DISULFID
DISULFID
                                                               sequence
from mous
                                                                                                              SEQUENCE FROM N.A.

MEDLINE-89197932; PubMed-2703490;

Muthukumaran G., Blumberg B., Kurkinen M.;

Mithukumaran G., Blumberg B., Kurkinen M.;

"The complete primary structure for the alpha 1-chain of mouse collagen IV. Differential evolution of collagen IV domains.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DISULFID DISULFID
                                                   FEBS
                                                                             Wood I
                                                                                                                                                                     Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                21-JUL-1986 (Rel. 01, Created)
01-FEB-1991 (Rel. 17, Last seq
15-JUL-1999 (Rel. 38, Last and
COLLAGEN ALPHA 1(IV) CHAIN PRE
                                                                                                                                                                                                                                          MOUSE
                                                                                                                                                                                                                                                                      1540
                                                                                                                                                                                                                                                                                                  1480
                                                                                   MEDLINE=88112221; PubMewood L., Theriault N.,
                                                                                                                                                                                          COL4A1
                                                                                                                                                                                                                                   CA14_MOUSE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                DISULFID
                                                                                                  SEQUENCE
                                                                                                                                                                                   Mus musculus
                                                                                                                                                                                                                                                                                    61
                                                                                                                                                                                                                                                                                                        1 QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR
                                                               mouse.
                                                                                                                                                                                                                                                                      NIRPFISRCAV
                                                                                                                                                                                                                                                                                    ALEPYISRCTV
                                                                                                                                                                                                                                                                                                  ERAHGQDLGTAGSCLRKFSTMPFLFCNINNVCNFASRNDYSYWLSTPEPMPMSMAPITGE 1539
                                                                             clones
                                                                                                                                                                                                                                                                                                                             55;
                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                      of.
                                                                                                  읁
                                                         227:5-8(1988).
                                                                                                                                                                                                                                                                                                                                                                998
1010
1012
1358
1669
                                                                                                                                                                                                                                                                                                                                                                                                 1441
126
1493
1493
1505
1570
1604
1616
237
237
241
319
719
837
842
896
                                                                      the
                                                                                                  1-1154 FROM
                                                                                                                                                                                                                                                                                                                             Conservative
                                                                             completing
                                                                                                                                                                                    (Mouse)
                                                                                                                                                                                                                                   STANDARD;
                                                                     alpha
                                                                                                                                                                                                                                                                      1550
                                                                                                                                                                                                                                                                                    71
                                                                                   4 FROM N.A.
PubMed=3338568;
t N., Vogeli G.;
                                   PubMed=3755692;
                                                                                                                                                                                                                                                                                                                                                                      1358
                                                                                                                                                                                                                                                                                                                                                                             1669
1551
1551
1541
1541
1665
1662
1622
241
241
319
719
842
896
904
914
                                                                                                                                                                     Chordata;
Rodentia;
                      Horn E., Sobel ha 1 type-IV col
                                                                                                                                                                                                                                                                                                                                   82.3%;
77.5%;
                                                                                                                                                                                                                                                                                                                                                                160611
                                                                      the nucleotide and chain of basement :
                                                                                                                                                                                                sequence up tannotation PRECURSOR.
                                                                                                                                                                                                                                                                                                                            Score 321; DB
Pred. No. 1.5e
9; Mismatches
                                                                                                                                                                                                                                                                                                                            9;
                                                                                                                                                                                                                                                                                                                                                               M E O X O O E < X D Z O O O O O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NONHELICAL REGION (NC1).
N-LINKED (GLCNAC. . .).
OR 1548.
OR 1551.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        유
유
                                                                                                                                                                    Craniata; Vertebrata;
Sciurognathi; Muridae;
                                                                                                                                                                                                                                   PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1662.
1665.
                                                                                                                                                                                                                                                                                                                                                                                                                                                          ţ
                      collagen
                                                                                                                                                                                                                                                                                                                                                               3BEBA6DFFB9B8A84
                                                                                                                                                                                                                                                                                                                                                                                                                                       E (IN R)
A (IN R)
A (IN R)
                                                                                                                                                                                                                                                                                                                                   321;
No. 1
                                                                                                                                                                                                                                   1669
                             M.E.,
                                                                                                                                                                                                              update)
                                                                                                                                                                                                                                                                                                                                                                     (IN
NI)
                                                                                                                                                                                                       update)
                                                                                                                                                                                                                                                                                                                                                                     RETT.
                                                                                                                                                                                                                                                                                                                                   DB 1;
.5e-30;
                                                                      d derived membrane
                      CDNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                          REF.
                              Zon
                                                                                                                                                                     Muridae;
                                                                                                                                                                                                                                                                                                                                                                     ω<u>Φ</u>
• •
                      A clone
                                                                                                                                                                                                                                                                                                                                                                                                                                                         4)
                                                                                                                                                                                                                                                                                                                                         Length 1669;
                             Vogeli
                                                                                                                                                                                                                                                                                                                            Indels
                                                                                                                                                                                                                                                                                                                                                               CRC64;
                                                                     amino
(type
                                                                                                                                                                           Euteleostomi;
                      using
                                                                                                                                                                     Murinae;
                                                                     acid
IV) (
                           G
                                                                                                                                                                                                                                                                                                                            0;
                                                                     collagen
                                                                                                                                                                     Mus
                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                              60
                                                                                                                                                                                                                                                                                                                            0
```

entities or send a

an

requires

equires a license agreement ()
email to license@isb-sib.ch)

the

European

between

the

use by non-profit institutions as long modified and this statement is not removed

is not removed

(See

http://www

.isb-sib

.ch/announce/

Usage

bу

for

in

n no way

restrictions and

EMBL

EMBL;

J03758; M23333; J04694;

AAA37439. AAA51625. AAA50292.

. . . .

```
collagen chain and the corresponding region J. Biol. Chem. 263:8706-8709(1988).
-i- FUNCTION: TYEE IV COLLAGEN IS THE MAJOR GLOMERULAR BASEMENT MEMBRANES (GBM), FOI MESHWORK TOGETHER WITH LAMININS, PROTEON
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE OF 1-28 E MEDLINE=89071759; Burbelo P.D., Mart
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDLINE-89066738; PubMed-3198626;
Kaytes P., Wood L., Theriault N., Kurking
"Head-to-head arrangement of murine type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Burbelo P.D., Martin G.R., "Alpha 1(IV) and alpha 2(I' bidirectional promoter and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            MEDLINE=86196099; PubMed=3009468; Sakurai Y., Sullivan M., Yamada Y
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          complementary DNA."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Oberbaeumer I., Laurent M., Schwarz U., Sakurai Y., Yamada Y., Vogeli G., Voss T., Siebold B., Glanville R.W., Kuhn K.; "Amino acid sequence of the non-collagenous globular domain (NCl)
                                                                                                                                                                                                                                                                                                                                         -
                                                                                                                                                                                                                                                                                                                                                                                                                                    Killen P.D., Burbelo P., Sakurai Y., Yamada "Structure of the amino-terminal portion of
                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE=88243724;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PARTIAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        the alpha 1(IV) chain of basement membrane
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE OF 1-129
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Proc. Natl.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SEQUENCE OF 1-28
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 "Alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             "Extensive homology between the carboxyl-terminal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Saus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Kurkinen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE=87250460;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE OF 1441-1669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MEDLINE=85127033;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Biol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Biol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Biol.
                                                                                                                                                                         PTM: PROLINES AT THE THIRD POSITION OF THE TRIPEPTIDE REPEATING UNIT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS. PTM: TYPE IV COLLAGENS CONTAIN NUMEROUS CYSTEINE RESIDUES WHICH ARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULFIDE BONDING. 12 THESE, LOCATED IN THE NC1 DOMAIN, ARE CONSERVED IN ALL KNOWN TY
                                                                                                                                                                                                                                         SUBUNIT: THERE ARE SIX TYPE IV COLLAGEN ISOFORMS, ALPHA 1(IV)-
ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELLX STRUCTURE
WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN UNETWORK.

DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS
DOMAIN (NC1) AT THEIR C-TERMINUS, FREQUENT INTERRUPTIONS OF THE
G-X-Y REPEATS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH M
CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL
TRIPLE-HELICAL 7S DOMAIN.
                                                                                                                                                               ۷Ι
                                                                                                                                                                                                                                                                                                                                                        NIDOGEN.
                                                                                                                                    SWISS-PROT entry is
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 l(IV) and alpha 2(IV) collagen.
ol. Chem. 262:8496-8499(1987).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1 type IV collagen
                                                                                                                                                               COLLAGENS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Chem.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          M., Condon M
Pihlajaniemi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Chem. 263:19274-19277(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1276-1669 FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Acad.
                                                                                          ROY entry is copyright. It is produced through
Swiss Institute of Bioinformatics and the EN
Bioinformatics Institute. There are no restr
-profit institutions as long as its content
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     261:6654-6657(1986)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PubMed=3597383;

on M.R., Blumberg iemi T.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              147:217-224(1985).
                                                                                                                                                                                                                                                                                                                                                                                                                                                               PubMed=3379041;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sci.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PubMed=3200851;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PubMed=2578961;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             z
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Z
A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       2(IV) collagen genes are mand a shared enhancer.";
U.S.A. 85:9679-9682(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              .
>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                gene evolved
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Blumberg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Yamada
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ×
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Υ.;
                                                                                                                                                                                                                                                                                                                                                                                THE MAJOR STRUCTURAL COMPONENT (GBM), FORMING A 'CHICKEN-WIRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Kurkinen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ₩.,
                                                                                                                                                                                                                                                                                                                                                                   PROTEOGLYCANS AND ENTACTIN/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                differently
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Barlow
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ٧
                                                                                                                                                                            CONSERVED IN ALL KNOWN TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                .
₹
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         collagen as derived from
                                                                                                                                                                                                                                                                                                                                                                                                                       the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      D.,
                                                                                                                                                                                                                                                                                                                                                                                                                         the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Vogeli
                                                                                                                                                                                                                                                                                                                                                                                                                                    murine alpha 1(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    regulated
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             peptides
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Quinones
                                                                                                                                                                                                                                                                                                                                                                                                                       gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   genes.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                G.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 fibrillar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     уd
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ŝ
                                                                                                                       collaboration -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               mouse
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      of
                                                                                                                                                                                                                                                                      MAY
                                                                                                                                                                                        Q.
```

```
RRN OCC OCC PR
                                                                                                                                                                                             CA54_CANFA
                                                                                                                                                                                                                                                           DЬ
                                                                                                                                                                                                                                                                                        Ş
                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                             RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local
                                                                                                                 Q28247;
01-NOV-1997 (Rel. 3
01-NOV-1997 (Rel. 3
15-JUL-1998 (Rel. 3
                                                                                                                                                                                                                                                                                                                                                                                  tches
                                                                                                                                                                                                                                                                                                                                                                                                                                                            CONFLICT
CONFLICT
CONFLICT
CONFLICT
CONFLICT
CONFLICT
CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CONFLICT
CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DISULFID DISULFID DISULFID DISULFID DISULFID DISULFID DISULFID DISULFID DISULFID
                                       Eukaryota; Metazoa; Chordata; (Mammalia; Eutheria; Carnivora;
                                                                                                                                                                                                                                                           1540 NIRPFISRCAV 1550
                                                                                                                                                                                                                                                                                                                      1480
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DOMAIN
                         NCBI_TaxID=9615;
                                                                    Canis familiaris (Dog).
                                                                                    COL4A5
                                                                                                    COLLAGEN ALPHA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Pfam; PF01413; C4; 2.
Pfam; PF01391; Collagen; 21.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          EMBL;
EMBL;
EMBL;
                                                                                                                                                                                CA54_CANFA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PROPEP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Repeat; Hydroxylation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Extracellular matrix; Connective tissue; Basement membrane,
SEQUENCE, FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        MGD; MGI:88454; Col4al.
InterPro; IPR000087; -.
InterPro; IPR001442; -.
                                                                                                                                                                                                                                                                                        61 ALEPYISRCTV 71
                                                                                                                                                                                                                                                                                                                                                    ...
                                                                                                                                                                                                                                                                                                                                 ERAHGQDLGTAGSCLRKFSTMPFLFCNINNVCNFASRNDYSYWLSTPEPMPMSMAPISGD 1539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      X06777;
X02201;
M15832;
M14042;
M12879;
M13024;
M13025;
M13025;
M13027;
M13027;
M13043;
J04448;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A33525;
                                                                                                                                                                                                                                                                                                                                                                                  54;
                                                                                                                                                                                                                                                                                                                                                                                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1441
1460
1493
                                                                                                                                                                                                                                                                                                                                                                                 Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1570
1604
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       126
26
186
319
319
369
403
481
493
                                                                                                  5(IV)
                                                                                                                                                                               STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                             ΑA;
                                                                                                 35, Created)
35, Last sequence update)
36, Last annotation update)
IV) CHAIN (FRAGMENT).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        982
1397
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1665
1662
1622
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1669
1551
1548
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  27
172
1669
1440
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1511
                                      Chordata; Craniata; Vertebrata; Carnivora; Fissipedia; Canidae;
                                                                                                                                                                                                                                                                                                                                                                                               80.8%;
76.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                            160680
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Glycoprotein; Collagen; Signal.
                                                                                                                                                                                                                                                                                                                                                                                                                                               AMINO-TERMINAL PROPEPTIDE (7S DO COLLAGEN ALPHA 1(IV) CHAIN.

TRIPLE-HELICAL REGION (NC1).

OR 1548 (BY SIMILARITY).

OR 1551 (BY SIMILARITY).

OR 1665 (BY SIMILARITY).

BY SIMILARITY.

OR 1665 (BY SIMILARITY).

OR 1665 (BY SIMILARITY.

                                                                                                                                                                                                                                                                                                                                                                                 10;
                                                                                                                                                                                                                                                                                                                                                                              Score 315; DB 1;
Pred. No. 7.8e-30;
0; Mismatches 7;
                                                                                                                                                                             PRT;
                                                                                                                                                                             754
                                                                                                                                                                             ΑA
                                                                                                                                                                                                                                                                                                                                                                                                          Length 1669;
                                                                                                                                                                                                                                                                                                                                                                               Indels
                                       Euteleostomi; Canis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DOMAIN)
                                                                                                                                                                                                                                                                                                                                                                               0,
                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                              0
```

Qy Db

61 ALEPYISRCTV

71

572

KRAHGODLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMSMEPLKGQ 631

맑

```
QΥ
                                                                                                                                                                                                          STEP TO THE TOTAL TO SERVICE OF STREET TO SERVICE OF SERVICE OF STREET TO SERVICE OF STREET TO SERVICE OF STREET TO SERVICE OF STREET T
                                                                                                 Query Match
Best Local
                                                                           Matches
                                                                                                                                                                                                                                                                                 DISULFID DISULFID DISULFID
                                                                                                                                                                                                                             DISULFID NON_TER
                                                                                                                                                                                                                                                                                                                                                                                                                     DOMAIN
DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Extracellular Glycoprotein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation - the European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    mutation in the g
IV.";
Proc. Natl. Acad.
                                                                                                                                                                                                        SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                  DISULFID
                                                                                                                                                                                                                                                                                                                                                                                          DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NON_TER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Pfam; PF01391; Collagen; 8.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Pfam; PF01413; C4; 2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EMBL; U07888; HSSP; Q04656;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  "Canine X chromosome-linked hereditary nephritis: a genetic human X-linked hereditary nephritis resulting from a single mutation in the gene encoding the alpha 5 chain of collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STRAIN=SAMOYED; TISSUE=Kidney; MEDLINE=94224868; PubMed=8171024;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             InterPro; IPR000087; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Zheng K.,
                        _
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SUBCELLULAR LOCATION: CELL SURFACE (POTENTIAL).

DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN A NONCOLLAGENOUS DOMAIN: ALPHA CHAINS OF THEER C-TERMINUS, FREQUENT INTERRUPTIONS OF THE DOMAIN (NCL) AT THEIR C-TERMINUS, FREQUENT IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH) CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      FUNCTION: TYPE IV COLLAGEN IS THE MAJOR STRUCTURAL COMPONENT GLOMERULAR BASEMENT MEMBRANES (GBM), FORMING A 'CHICKEN-WIRE-MESHWORK TOGETHER WITH LAMININS, PROTEOGLYCANS AND ENTACTIN/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BY PROGRESSIVE SIMILARITY: TO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DISEASE: A DEFECT IN COL4A5 HAS BEEN FOUND TO BE THE CAUSE OF CANINE X-LINKED HEREDITARY NEPHRITIS (HN), A DISEASE SIMILAR TO THAT IN HUMANS (ALSO REFERED TO AS ALPORT SYNDROME) CHARACTERIZED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           UNIT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS. PTM: TYPE IV COLLAGENS CONTAIN NUMEROUS CYSTEINE RESIDUES WARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULEIDE BONDING THESE, LOCATED IN THE NC1 DOMAIN, ARE CONSERVED IN ALL KNOW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SUBUNIT: THERE ARE SIX TYPE IV COLLAGEN ISOFORMS, ALPHA 1(IV) ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELIX STRUCTURE WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN NETWORK.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TRIPLE-HELICAL 7S DOMAIN. POSITION OF THE TRIPEPTIDE REPEATING
QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COLLAGENS
                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       non-profit institutions as long
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     IPR001442;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Thorner P.S., Marrano P., Baumal R., McInnes R.R.;
                                                                                                                                                                                                                                                           1
531
552
585
585
662
708
                                                                        Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         matrix;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAB60258.1;
                                                                                                                                                                                                        AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Basement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ANS (ALSO REFERED TO AS ALPORT SYNDROME) CHI
IVE RENAL FAILURE AND NEUROSENSORY DEAFNESS.
TO OTHER TYPE IV COLLAGENS.
                                                                                                                                                                                                                                                                                                            530
>754
643
640
603
?
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Sci. U.S.A.
                                                                                                                                                                                                     73537
                                                                                                 80.5%;
73.2%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Connective tissue; Repeat; Hydroxylation; t membrane; Collagen; Cell adhesion.
                                                                                                                                                                                                     WW;
                                                                        13;
                                                                                                                                                                                                                                                      TRIPLE-HELICAL REGION.
NONHELICAL REGION (NC1).
OR 640 (BY SIMILARITY).
OR 643 (BY SIMILARITY).
BY SIMILARITY.
OR 754 (BY SIMILARITY).
BY SIMILARITY.
                                                                Score 314; DB
Pred. No. 4.6e
13; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       91:3989-3993(1994)
                                                                                                                                                                                                  D5E321C287FA925B CRC64
                                                                                                 DB 1;
.6e-30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       as its content
                                                                        6;
                                                                                                                    Length
                                                                      Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           BONDING.
                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  base
type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WHICH
                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Q.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MAY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             on
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   OF
                                                                      0
```

RESULT 6

1685

A

```
RANDO OCCUPANTO
   RAP RAPARA
                                                                                                                                                                                                     Proc.
                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDIJNE-9037990; pubMed=2380186;
Pihlajaniemi T., Pohjolainen E.R., Myers J.C.;
"Complete primary structure of the triple-helical carboxyl-terminal domain of a new type IV collager
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CA54_HUMAN STANDARD; PRT; 16
P29400; Q16126; Q16006;
01-DEC-1992 (Rel. 24, Created)
01-FEB-1994 (Rel. 28, Last sequence up
01-OCT-2000 (Rel. 40, Last annotation
COLLAGEN ALPHA 5(IV) CHAIN PRECURSOR.
                                                               Guo
                                                                                                                        SEQUENCE OF 1442-1471 FROM N.A. MEDL.NE=90252791; PubMed=2339699; MYEDI.NE=90252791; PubMed=2339699; MYETS J.C., Jones T.A., Pohjolainen E.R., K Sheer D., Solomon E., Pihlajaniemi T.; Sheer D., Solomon E., Pihlajaniemi T.; Molecular cloning of alpha 5(IV) collagen to the region of the X chromosome containin
                                                                                                                                                                                                              "Identification of a distinct type IV collagen alpha restricted kidney distribution and assignment of its locus of X chromosome-linked Alport syndrome.", Proc. Natl. Acad. Sci. U.S.A. 87:1606-1610(1990).
                                                                                                                                                                                                                                                                                                                                      MEDLINE-91169491; PubMed-2004755; Zhou J., Hostikka S.L., Chow L.T., Tryggvason K.; "Characterization of the 3' half of the human type 5 gene that is affected in the Alport syndrome.";
                                                                                                                                                                                                                                                                                                                                                                                                                             5(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              J. Biol. Chem. 269 [2] SEQUENCE OF 1-910
SEQUENCE OF 1258-1270 MEDLINE=94133540; Pubm
                                      Submitted
                                                                                          [2]
|-
                                                                                                                                                                                                                                                                                                 [5]
SEQUENCE OF 914-1685 FROM
                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE OF 924-1685 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TISSUE=Placenta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         converting glycine 521 in the collagenous alport syndrome patient.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDLINE-92316923;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Zhou J., Leinonen A., Tryggvason K.; "Structure of the human type IV collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COL4A5
                                                                                                                                                                                                                                                                Tryggvason K.,
                                                                                                                                                                                                                                                                           Hostikka S.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE OF 85-1685
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE-94165049;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Homo sapiens (Human)
                                                                                                                                                                                                                                                                                        MEDLINE-90160375;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Zhou J., Hertz J.M., Leinonen A., Tryggvason "Complete amino acid sequence of the human al chain and identification of a single-base mut
                                                                                                    J. Hum. Genet.
                                                             van Damme
                                                                          QĘ
                                                                                                                                                                                                                                                                                                                                                                                                                 Chem.
                                      (SEP-1994)
                                                                          1-20
                                                                                                                                                                                                                                                                          Eddy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             e patient.";
267:12475-12481(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                265:13758-13766(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       269:6608-6614(1994).
                                                             FROM
e B.,
                                                                                                                                                                                                                                                                          685 FROM N.A.
PubMed=1689491;
dy R.L., Byers M.G.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              FROM N.A.,
  1270 FROM N.A. |
PubMed=8301933
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PubMed=1352287;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PubMed=8120014;
                                                                                                  46:1024-1033(1990)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Chordata;
Primates;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FROM
                                      ť
                                                             N.A.
Vanrenterghem
                                      the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       N.A
                                      EMBL/GenBank/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AND VARIANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Craniata; Vertebrata; Euteleostomi; Catarrhini; Hominidae; Homo.
              (SPLICED
                                                                                                                          containing
                                                              Υ.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    update)
                                                                                                                                                                                                                                                                          Hoeyhtyae
                                                              Devriendt
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ason K.;
an alpha 5
mutation
               FORM)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COL4A5
                                                                                                                  n and ⊾
¬ the ⊁
                                                                                                                                                              Kadri
                                                                                                                                                                                                                                                                                                                                                                                                                                         collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      domain to cysteine in an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CYS-521
                                      databases
                                                                                                                                     assignment
                                                                                                                                                                                                                                                                           X
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene.";
                                                                                                                                                              A.S.,
                                                                                                                           Alport
                                                                                                                                                                                                                                                                                                                                                                                                                                       region
n chain,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (IV)
                                                                                                                                                                                                                                                                                                                                                     ٧I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   in exon
                                                                                                                                                                                                                                                                           Shows
                                                                                                                                                                                                                                      chain
gene t
                                                                                                                                                              Goddard
                                                              Cassiman
                                                                                                                                                                                                                                                                                                                                                   collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   collagen
exon 23
                                                                                                                           syndrome
                                                                                                                                                                                                                                                                                                                                                                                                                                                      and
                                                                                                                                                                                                                                                                         Т.В.,
                                                                                                                                     of.
                                                                                                                                                                                                                                        ç
                                                                                                                                                              A.D.,
                                                                                                                                     gene
```

```
exons of Am. J. Hu [17]
                                                                                                                                                                                                                                                                                                                                                                                                                                                   VARIANTS AS E-400; V-406; V-638; A-638; R-653; R-796; R-869; R-872 & C-1241. MEDILINE=95322976; PubMed=7599631; Boye E., Flinter F., Zhou J., Trygyvason K., Bobrow M., Harris A.; "Detection of 12 novel mutations in the collagenous domain of the COL4A5 gene in Alport syndrome patients."; Hum. Mutat. 5:197-204(1995).
                                                                                                                                                                                                                                                                                                                                                                                                                                                 CDNA
                                                                                                                                                                                                                                                              Tryggvason K., Haggsma-Schoute
van Oost B.A., Smeets H.J.M.;
"Identification of four novel
patients with Alport syndrome.
Genomics 17:485-489(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDLINE-97338662; PubMed-9195222;
Lemmink H.H., Schroeder C.H., Monnens L.A.H.,
"The clinical spectrum of type IV collagen mut
Hum. Mutat. 9:477-499(1997).
                                       Renieri A., Bruttini M., Galli L., Zanelli P. Turco A., Heiskari N., Zhou J., Gusmano R., P. Scolari F., Seesa A., Alzzoni G., Tryggvason Savi M., Ballabio A., de Marchi M.;
                                                                            VARIANTS AS.
MEDLINE=96213754;
                                                                                                          MEDLINE-96213750; PubMed-8651292;
Barker D.F., Pruchno C.J., Jiang X., Atki
Denison J.C., Fain P.R., Gregory M.C.;
"A mutation causing Alport syndrome with
common in the western United States.";
Am. J. Hum. Genet. 58:1157-1165(1996).
                                                                                                                                                                                                                                                                                                                                                                   glutamic
                                                                                                                                                                                                                                                                                                                                                                                             MEDLINE=93244772; Pul
Renieri A., Seri M.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VARIANT AS ARG-325.
MEDLINE=92303559; F
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "Single base mutation in conserved cysteine to sugernations 9:10-18(1991).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         WARIANT AS SER-1564.
MEDLINE=91169492; Pu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            deletes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     cells: a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              "Differential splicing of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Guo
                                                                                                                                                                        VARIANT AS ARG-1649.
                                                                                                                                                                                                                                                                                                                           MEDLINE=94010948;
                                                                                                                                                                                                                                                                                                                                                         Hum.
                                                                                                                                                                                                                                                                                                                                                             Rizzoni G., de Marchi M.;
"De novo mutation in the COL4A5 slutamic acid in Alport syndrome
                                                                                                                                                                                                                                                                                                                                                                                     Renieri A.,
Rizzoni G.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Tryggvason K
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Zhou J., Barker
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               REVIEW
                             "X-linked Alport syndrome:
                                                                                                                                                                                                                                                                                                                                                                                                                   VARIANT AS GLU-325.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          9
                                                                                                                                                                                                                                                                                                                Lemmink H.L., Schroeder C.H.,
                                                                                                                                                                                                                                                                                                                                     /ARIANTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    c.,
                                                                                                                                                                                                                                                                                                                                                                                                                                       <u>с</u>
                                                                                                                                                                                                                                                                                                                                                       Mol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                fragments."
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ON VARIANTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    van
                     the
                                                                                                                                                                                                                                                                                                                                   AS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     complex mutation
                                                                                                                                                                                                                                                                                                                                                        Genet.
                                                                                                                                                                                                                                                                                                                                   THR-1517;
                                                                                                                                                                                                                                                                                                                                                                                                                                       Genet.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NC1 domain.";
44:1316-1321(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Damme B.,
                     COL4A5
                                                                                                                                                                                                                                                                                                       Haggsma-Schouten
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2; PubMed=1672282;
D.F., Hostikka S.
                                                                                                                                                                                                                                                                                                                                                       Alport syndrome.
1:127-129(1992).
                                                                                                                                                                                                                                                                                                                        PubMed=8406498;
                                                                                                                                                                                                                                                                                                                                                                                            PubMed=1363780;
4., Myers J.C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PubMed=1376965;
                                                                                PubMed=8651296;
          5 gene.";
58:1192-1204(1996)
                                                                                                                                                                                                                                                                                                                                                                                                                                      51:135-142(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     van
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   serine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            in alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     COL4A5
in the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Damme-Lombaerts
                             an SSCP-based
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  'n
                                                                                                                                                                                                                                                                         mutations ";
                                                                                                                                                                                                                                                                                                     Brunner H.G.,
en W.A.G., Room
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            5(IV)
                                                                                                                                                                                                                                                                                                                                                                 gene
e.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Alport
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     mRNA in
COL4A5 g
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Г.,
                                                                                                                                                                                                                                                                                                                                                                                              Pihlajaniemi
                                                         Zanelli P.,
smano R., Ma
                                                                                                                                            Atkin C.L.;
                                                                                                                                                                                                                                                                                                                                                                           converting
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gregory M.C.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  syndrome.
                                                                                                                                                                                                                                                                                                      .G., Nelen
Roodvoets
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     gene
                                                                                                                                                                                                                                                                                   in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     kidney
gene of
                              mutation
                                                                                                                                tardive
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ₽.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  mutations.
                                                                                                                                                                                                                                                                                   the
                                                            Massel
                                                 .
.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    van
                                                                                                                                                                                                                                                                                                                                                                                                Τ.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Smeets
                                                                    Neri
                                                                                                                                                                                                                                                                                   COL4A5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     and
an 1
                                                                                                                                                                                                                                                                                                                                                                           glycine
                                                eri T., Ro
ella L., E
Pignatti
                                                                                                                                hearing
                                                                                                                                                    Stone
                                                                                                                                                                                                                                                                                                      M.R.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    den
                                                                                                                                                                                                                                                                                                                                                                                               Massella
                              survey
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Alport patient
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Atkin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                white blood
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  8 H.J.M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    characterization
                                                                                                                                                                                                                                                                                   gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                          lymphoblast
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Berghe
                                                 Rossetti
., Banfi G.
:ti P.F.,
                                                                                                                                                    Ħ
                                                                                                                                                                                                                                                                                                      Rascher
                                                                                                                                loss
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 G
                              over
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            converting
                                                                                                                                                                                                                                                                                                                                                                            ç
                                                                                                                                                                                                                                                                                                                 Ч
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ξ.
                               a11
                                                            ۵
:
                                                                                                                                                                                                                                                                                                       Σ.
                                                                    s.
                               51
```

```
688888888
                                                                                                        В
  В
                                              QY
                                                                                                                                                            δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ISOFORM FOUNDED BY ALTERNATIVE SPLICING. ISOFORM AD 2; ARE ISOFORM FOUND IN KIDNEY, IN WHICH 2 EXTRA G-X-X REPEATS INTO THE TRIPLE-HELIX DOMAIN ARE INTRODUCED.

1- DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS DOMAIN (NC1) AT THEIR C-TERMINUS, FREQUENT INTERRUPTIONS OF THE G-X-Y REPEATS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH MAY CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL TRIPLE-HELICAL 75 DOMAIN.

1-- PTM: PROLINES AT THE THIRD POSITION OF THE TRIPLE-HELICAL TRIPLE-HELICAL 75 DOMAIN SOME OF THE TRIPLE-HELICAL 75 DOMAIN TO THE TRIPLE-HELICAL 75 THE THIRD POSITION OF THE TRIPLE-HELICAL 75 DOMAIN TO THE TRIPLE-HELICAL DOM
                                                                                                                                                                                                                                                   Query
Best 1
                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Neri T.M., Zanelli P., de Palma G., Savi M., Rossetti S., Turco A.E., Pignatti G.F., Galli L., Bruttini M., Renieri A., Mingarelli R., Trivelli A., Pinciaroli A.R., Ragaiolo M., Rizzoni G.F., de Marchi M.; "Missense mutations in the COL4A5 gene in patients with X-linked
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Krasnopolskaya X., Evgrafov O.; "Substitution of A1498D in noncollagen domain of a5(IV) col "Substitution of A1498D in noncollagen domain of a5viv) colchain associated with adult-onset x-linked Alport syndrome. Hum. Mutat. 7:149-150(1996).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Plant K.E., Green P.M., Vetrie D., Flinter F.A.; "Detection of mutations in COL4A5 in patients with Alport syndrome."; Hum. Mutat. 13:124-132(1999).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VARIANTS AS R-174; R-177; R-325; MEDLINE=98112435; PubMed=9452056;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            "Common ancestry of three Ashkenazi-American syndrome and COL4A5 R1677Q.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Tverskaya S., Bobrynina V., Tsa
Krasnopolskaya X., Evgrafov O.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VARIANT AS ASP-1498.
MEDLINE=96233932; PubMed=8829632;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Alport syndrome.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE=97295089; PubMed=9150741;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VARIANT AS GLN-1677
                                                                                                           1496
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                MEDLINE=99140256;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      VARIANTS AS,
1556
                                                    61 ALEPYISRCTV 71
                                                                                                                                                            1 ORAHGODLGTLGSCLORETTMPFLECNVNDVCNFASRNDYSYWLSTPALMPMNWAPITGR 60
                                                                                                                                                                                                                                                   ocal
                                                                                                                                                                                                                                                                             Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FUNCTION: TYPE IV COLLAGEN IS THE MAJOR STRUCTURAL COMPONENT GLOMERULAR BASEMENT MEMBRANES (GBM), FORMING A 'CHICKEN-WIRE' MESHWORK TOGETHER WITH LAMININS, PROTEOGLYCANS AND ENTACTIN/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELIX STRUCTURE WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN NETWORK.
ALTERNATIVE PRODUCTS: 2 ISOFORMS; 1 (SHOWN HERE) AND 2; ARE
PROBABLY PRODUCED BY ALTERNATIVE SPLICING. ISOFORM 2 IS A LO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SUBUNIT: THERE ARE SIX TYPE IV COLLAGEN ISOFORMS, ALPHA 1(IV)-
                                                                                                                                                                                                                                                                                                                            GLOMERULONEDÉRITIS, OFTEN ASSOCIATED WITH HIGHTONE SENSORINEURAL DEAFNESS, SPECIFIC EYE ABNORMALITIES (LENTICONOUS AND MACULAR FLECKS), AND GLOMERULAR BASEMENT MEMBRANE DEFECTS. IN MALES, THE TYPICAL TIME COURSE FOR THE PROGRESS OF ALPORT SYNDROME IS: HEMATURIA BY THE AGE OF 5 YEARS, DEAFNESS AND HYPERTENSION IN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NIDOGEN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Mutat. suppl. 1:S106-S109(1998).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Genet.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DISEASE: DEFECTS IN COL4A5 ARE ASSOCIATED WITH X-LINKED ALPORT SYNDROME (AS). ALPORT SYNDROME IS CHARACTERIZED BY PROGRESSIVE
SIQPFISRCAV 1566
                                                                                                           KRAHGODLGTAGSCLRRESTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMSMQPLKGQ 1555
                                                                                                                                                                                                                      Similarity
52; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              99:681-684(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            10256; PubMed=10094548; Green P.M., Vetrie D.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AND VARIANTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PubMed=9452056;
                                                                                                                                                                                                                                                80.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Tsalykova F.,
                                                                                                                                                                                                                            Pred. No. le-
3; Mismatches
                                                                                                                                                                                                                                                   Score 314; DB 1
Pred. No. 1e-29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            C-1410;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gregory
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            W-1421;
                                                                                                                                                                                                                                                                                DB 1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Ignatova
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ry M.C.;
families
                                                                                                                                                                                                                            6,
                                                                                                                                                                                                                                                                             Length 1685;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               T-1517
                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           with
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            AND D-1596
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Alport
                                                                                                                                                                                                                               0;
                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                               0;
```

```
CA24_ASCSU
P27393;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ASCSU
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       01-AUG-1992 (Rel.
01-AUG-1992 (Rel.
30-MAY-2000 (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              and the partial structural
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Eukaryota; Metazoa; Nematoda; Chromadorea; Ascaridida; Ascaridoidea;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COLLAGEN ALPHA
                                                                                                                                                                                                                                                                                                                This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     J. Biol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "The complete primary structure
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE FROM N.A. MEDLINE=91340768; PubMed=1714907;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ascaris suum (Pig roundworm) (Ascaris lumbricoides)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ascarididae;
                                                                            DISULFID DISULFID
                                                                                                  DISULFID DISULFID
                                                                                                                                                         DOMAIN
DOMAIN
                                                                                                                                                                                                               pfam; pr01391; Collagen; 23.
Hydroxylation; Connective tissue; Basement membrane;
                                                                                                                                                                                                                                                                                                                                                                                                                               -
                                                                                                                                                                                                                                                                                                                                                                                                                                                    +
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ÷
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  +
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -
                                                                                                                                                                                                                                                                       EMBL; M67507; AAA180
PIR; S16366; S16366
                                                                                                                                                                                                                                                                                                      entities requires a license agreement (Some send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                      Pfam; PF01413; C4;
 SEQUENCE
                                                                                                                                   DISULFID
                                                                                                                                                                                          SIGNAL
                                                                                                                                                                                                      Alternative
                                                                                                                                                                                                                                                  InterPro; IPR000087; -. InterPro; IPR001442; -.
                                  VARSPLIC
                                                       CARBOHYD
                                                                                                                         DISULFID
                                                                                                                                                DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                the partial structural organization of its gene.";
Biol. Chem. 266:16149-16156(1991).
FUNCTION: COLLAGEN TYPE IV IS SPECIFIC FOR BASEMENT MEMBRANES.
SUBUNIT: TRIMERS OF TWO ALPHA 1(IV) AND ONE ALPHA 2(IV) CHAIN.
TYPE IV COLLAGEN FORMS A MESH LIKE NETWORK LINKED THROUGH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         INTERMOLECULAR INTERACTIONS BETWEEN 7S DOMAINS
                                                                                                               1530
1548
1581
1593
  1763 AA;
                                                                                                   1656
                                                                                                                                                                                                      splicing;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ascaris
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              el. 23, Created)
el. 23, Last sequence update)
el. 39, Last annotation update)
el. 39 Last annotation.
                                                                                                                                                                                                                                                                                   AAA18014.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      STANDARD;
                                                         1529
1763
1763
1637
1634
1599
1752
1749
1709
                                                                                                                                                                                  1763
  168526
                                                                                                                                                                                                       Glycoprotein;
                                                                                       NONHELICAL REGION (NC1).
OR 1634 (BY SIMILARITY).
OR 1637 (BY SIMILARITY).
OR 1637 (BY SIMILARITY).
BY SIMILARITY.
OR 1749 (BY SIMILARITY).
OR 1752 (BY SIMILARITY).
   WW.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRT;
                                                       BY SIMILARITY.

N-LINKED (GLCNAC. . .) (POTENTIAL)

O-LINKED (GLYCOSAMINOGLYCAN) (IN F
                                  GEOGPRGPOGPPGPVPSTGAKGTIIGPEGAPGMKGEK
                                                                                                                                                            TRIPLE-HELICAL REGION
                        GDIGPAGPPGPPGPREFTGSGSIVGPRGHSGDKGVK
                                                                                                                                                                       7S DOMAIN
                                                                                                                                                                                   COLLAGEN ALPHA
                                                                                                                                                                                              POTENTIAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               of
                                                                                       1749 (BY SIMILARITY).
1752 (BY SIMILARITY).
    304F528BC06AAE0D
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               b
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1763
                                                                                                                                                                                                      signal.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    nematode alpha 2(IV) collagen
ion of its gene.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A
                                                                                                                                                                                   2(IV)
    CRC64
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AND BETWEEN NC
                                                                                                                                                                                                                     Repeat;
                                                          (IN FORM II)
                                                                                                                                                                                                                     Collagen;
```

```
RESULT
CA24_C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 01-OCT-1994 (Rel. 15, Created)
01-OCT-1994 (Rel. 30, Last sequence update)
30-MAY-2000 (Rel. 39, Last annotation update)
COLLAGEN ALPHA 2(IV) CHAIN PRECURSOR.
LET-2 OR CLB-1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CAEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STRAIN-BRISTOL N2;
STRAIN-BRISTOL N2;
MEDLINE-94012964; PubMed=7691828;
MEDLINE-94012964; PubMed=7691828;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDLINE-94320591; rubmeu-voller. Kramer J Sibley M.H., Graham P.L., von Mende N., Kramer J "Mutations in the alpha 2(IV) basement membrane "Mutations in the alpha broduce phenotypes of dif
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Sibley M.H., Johnson J.J., Mello C. "Genetic identification, sequence, Caenorhabditis elegans alpha 2(IV) J. Cell Biol. 123;255-264(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1568
                                                                                                                                                                                                                                                                                                                                                                                                                                                       Caenorhabditis elegans produce EMBO J. 13:3278-3285(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Guo X., Kramer J.M.; "The two Caenorhabditis elegans basement membrane
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STRAIN-BRISTOL N2;
MEDLINE-90008929; PubMed-2793871;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     NCBI_TaxID=6239
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Eukaryota; Metazoa; Nematoda; Chromadorea; Rhabditida; Rhabditoidea; Rhabditidae; Peloderinae; Caenorhabditis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Caenorhabditis elegans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CA24_CAEEL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    genes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Rhabditidae; Peloderinae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VARIANTS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PRELIMINARY SEQUENCE OF 1495-1758
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Biol.
                                                                                                                                               TISSUE SPECIFICITY: FORM I IS PREDOMINANT IN EMBRYOS AND FORM II IS PREDOMINANT IN THE LARVAE AND ADULTS:

DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS OF THIS C-TERMINUS, FREQUENT INTERRUPTIONS OF THIS C-X-Y REPEATS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL TRIPLE-HELICAL 7S DOMAIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           œ
  DISEASE:
                                                            PTM: PROLINES AT THE THIRD POSITION OF THE TRIPEPTIDE REPEATING UNIT (G-X-Y) ARE HYDROXYLAGTED IN SOME OR ALL OF THE CHAINS. PTM: TYPE IV COLLAGENS CONTAIN NUMEROUS CYSTEIRE RESIDUES WHICH ARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULFIDE BONDING. 12
                                                                                                                                                                                                                                                                                                   ALTERNATIVE PRODUCTS: 2 ISOFORMS; I (SHOWN HERE) PRODUCED BY ALTERNATIVE SPLICING.
                                                                                                                                                                                                                                                                                                                                                                                      FUNCTION: COLLAGEN TYPE IV IS SPECIFIC FOR BASEMENT MEMBRANES SUBUNIT: TRIMERS OF TWO ALPHA 1(IV) AND ONE ALPHA 2(IV) CHAIN TYPE IV COLLAGEN FORMS A MESH-LIKE NETWORK LINKED THROUGH
                                                                                                                                                                                                                                                                                                                                                                      INTERMOLECULAR INTERACTIONS BETWEEN 7S DOMAINS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GIEPYISRCAV 1636
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ALEPYISRCTV: | | | |
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           are located on separate chromosomes."; ol. Chem. 264:17574-17582(1989).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             46;
                                          LOCATED IN THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
  MUTATIONS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               65.6%;
IN LET-2 ARE GENERALLY EMBRYONIC LETHAL.
                                          NC1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Score 256; DB 1;
Pred. No. 9.8e-23;
                                            DOMAIN,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         .C., Kramer J.M.; and alternative splicing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1758
                                          ARE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Kramer J.M.;
nembrane collagen
                                          CONSERVED
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     gene.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             differing
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 1763;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      (type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                      AND BETWEEN NC1
                                        HZ
                                                                                                                                                                   RRUPTIONS OF THE L DOMAIN (WHICH M. HORT N-TERMINAL
                                                                                                                                                                                                                                                                                                                            AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                severities.";
                                          ALL KNOWN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      IV)
                                                                                                                                                                                                                                                                                                                            II;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         2
                                                                                                                                                                                                                                                                                                                            ARE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   60
                                                                                                                                                                                            MAY
                                                              OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1;
```

3558

吕

δÃ 밁 Qy

В

뮹 Ω В δÕ

This

SWISS-PROT ent een the Swiss

entry is copyright. It is produced through a collaboration iss Institute of Bioinformatics and the EMBL outstation -

```
Matches
                                                                                                                                                                                                                                                                            Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       EMBL; Z22964; CAA80536.1; -.
EMBL; Z22964; CAA80537.1; -.
EMBL; Z22964; CAA80537.1; -.
EMBL; Z25066; AAA27989.1; -.
EMBL; U22327; AAA64312.1; ALT_SEQ.
PIR; A34476; A34476.
InterPro; IPRO00087; -.
InterPro; IPRO01442; -.
Pfam; PF01413; C4; 2.
                                                                                                                                                                                                                                                                                                                             VARIANT
CONFLICT
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                        VARIANT
VARIANT
VARIANT
VARIANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VARIANT
VARIANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VARIANT
VARIANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DISULFID DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        DOMAIN
DISULFID
P17139:
01-AUG-1990 (Rel. 15, Created)
01-MAR-1992 (Rel. 21, Last sequence up
01-NOV-1997 (Rel. 35, Last annotation
COLLAGEN ALPHA 1(IV) CHAIN PRECURSOR.
EMB-9 OR CLB-2 OR K04H4.1.
Caenorhabditis elegans.
                                                                                                         CAEEL
                                                                                                                                                         1624
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entities requires a license agreement (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Pfam; PF01391; Collagen; Hydroxylation; Connective
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           or send
                                                                                          CA14_CAEEL
                                                                                                                                                                                                             1566 EKSHNQDLGHAGSCLQRFSTMPFLFCDFNNVCNYASRNEKSYWLSTSEAIP--MMPVNER 1623
                                                                                                                                                                                                                                                                                                                                                                     VARIANT
                                                                                                                                                                                                                                                                                                                                                                                VARIANT
                                                                                                                                                                                                                                                                                                                                                                                               VARIANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                              VARIANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   VARIANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               VARSPLIC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Alternative
                                                                                                                                                                                  61 ALEPYISRCTV
                                                                                                                                                                                                                                     1 QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR
                                                                                                                                                         EIEPYISRCAV
                                                                                                                                                                                                                                                               l Similarity
45; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                              690
737
877
904
1003
1125
1152
1286
1682
1758
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1528
1546
1579
1591
1654
1688
1700
248
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     splicing;
                                                                                                                                                                                                                                                               Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Collagen; 23.
Connective tissue; Basement membrane;
                                                                                          STANDARD;
                                                                                                                                                                                                                                                                                                                              AA;
                                                                                                                                                         1634
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1758
42
1527
1527
1758
1635
1632
1597
1750
1750
                                                                                                                                                                                                                                                                                                                                                     1003
1125
1152
1286
                                                                                                                                                                                                                                                                                                                                                                                                         48
366
570
588
597
690
690
737
737
                                                                                                                                                                                                                                                                         64.9%;
63.4%;
                                                                                                                                                                                                                                                                                                                              167750
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Glycoprotein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NONHELICAL REGION (NC1).

OR 1632 (BY SIMILARITY).

OR 1635 (BY SIMILARITY).

OR 1635 (BY SIMILARITY).

BY SIMILARITY.

OR 1747 (BY SIMILARITY).

OR 1750 (BY SIMILARITY).

BY SIMILARITY.

OR 1750 (BY SIMILARITY).

O'LINKED (GLYCOSAMINOGLYCAN) (POTENTIAL).

O'LINKED (GLYCOSAMINOGLYCAN) (POTENTIAL).
                                                                                                                                                                                                                                                               11;
                                                                                                                                                                                                                                                                                                                              MW;
                                                                                                                                                                                                                                                                                                                                           Pred. No. 2.20
1; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GDLGSVGPPGPPGPREFTGSGSIVGPRGNPGEKGDK
DIGAMGPAGPPGPIASTMSKGTIIGPKGDLGEKGEK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TRIPLE-HELICAL REGION. NONHELICAL REGION (NC1)
                                                                                                                                                                                                                                                                                        Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ISOFORM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COLLAGEN ALPHA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        POTENTIAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DOMAIN.
                                                                                                                                                                                                                                                                                                                              97EE3F3DBB2D2AC5 CRC64;
                                                                                                                                                                                                                                                                           253;
No. 2.
                                                                                          1758
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Signal.
                                       update)
                                                                                                                                                                                                                                                                                                                                                                             IN MN103 AND MN151; 96% IN MN152; 50% LETHAL).

IN MN101; 100% LETHAL).

IN MN102; 100% LETHAL).

IN MN129; 100% LETHAL).

IN MN143; 100% LETHAL).

IN G30; 90% LETHAL).

IN G1470; 94% LETHAL).

IN MN139; 20% LETHAL).

IN MN139; 20% LETHAL).

IN G25; 2% LETHAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MN114; 73% LETHAL).
MN126; 100% LETHAL).
MN109; 37% LETHAL).
                                                                                                                                                                                                                                                                                                                                           G37 AND B246; 9% LETHAL).
REF. 1).
                                                                                                                                                                                                                                                                                                                                                                     MN147;
                                                                                                                                                                                                                                                                         DB 1;
.2e-22;
                                                                                          A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2(IV)
                                                                                                                                                                                                                                                                                                                                                                     7% LETHAL).
                                                                                                                                                                                                                                                                                       Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CHAIN
                                                                                                                                                                                                                                                               Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Repeat;
                                                                                                                                                                                                                                                             2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    LETHAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Collagen;
                                                                                                                                                                                                                                                             Gaps
                                                                                                                                                                                                                                      60
                                                                                                                                                                                                                                                             1:
```

```
Wilson R., Ainscough R., Anderson K., Baynes C., Berks M.,
Bonfield J., Burton J., Connell M., Copsey T., Cooper J., Coulson A
Craxton M., Dear S., Du Z., Durbin R., Favello A., Fraser A.,
Fulton L., Gardner A., Green P., Hawkins T., Hillier L., Jier M.,
Johnston L., Jones M., Kershaw J., Kirsten J., Laisster N.,
Johnston L., Jones M., Kershaw J., Kirsten J., Laisster N.,
Latreille P., Lightning J., Lloyd C., Mortimore B., O'Callaghan M.,
Parsons J., Percy C., Rifken L., Roopra A., Saunders D., Shownkeen
Sims M., Smaldon N., Smith A., Smith M., Sonnhammer E., Staden R.,
Sulston J., Thierry-Mieg J., Thomas K., Vaudin M., Vaughan K.,
Waterson R., Watson A., Weinstock L., Wilkinson-Sproat J.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STRAIN-BRISTOL N2;
MEDLINE-91141582; PubMed=199
Guo X., Johnson J.J., Kramer
"Embryonic lethality caused
collagen of C. elegans.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     The two Caenorhabditis elegans basement membrane (type IV) collag genes are located on separate chromosomes.";
J. Biol. Chem. 264.117574-717582(1989)
-i. FUNCTION: COLLAGEN TYPE IV IS SPECIFIC FOR BASEMENT MEMBRANES.
-i. SUBUNIT: TRIMERS OF TWO ALPHA 1(IV) AND ONE ALPHA 2(IV) CHAIN.
-i. SUBUNIT: TRIMERS OF TWO ALPHA 1(IV) AND ONE ALPHA 2(IV) CHAIN.
-i. YUPE IV COLLAGEN FORMS A MESH-LIKE METWORK LINKED THOUGH
INTERMOLECULAR INTERACTIONS BETWEEN 7S DOMAINS AND BETWEEN NC1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          STRAIN=BRISTOL N2;
MEDLINE=94150718; PubMed=7906398;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Nature 349:707-709(1991).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Eukaryota; Metazoa; Nemat
Rhabditidae; Peloderinae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          eLegans
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 NCBI_TaxID=6239;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE=90008929; PubMed=2793871;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STRAIN-BRISTOL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE OF 1446-1758 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Nature 368:32-38(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Wohldman P.;
                                                                                                         EMBL;
                                                                                                                                                EMBL;
                                                                                                                                                                                                    entities
                                                                                                                                                                                                                                                                             between
                   WormPep; K04H4.1; CE00246
InterPro; IPR000087; -.
InterPro; IPR001442; -.
                                                                                                                                                                                 entities requires a license agreement (some send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAG DOMAIN (NC1) AT THEIR C-TERMINUS, FREQUENT INTERRUPTIONS G-X-Y REPEATS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERTRIPLE-HELICAL 7S DOMAIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  X., Kramer J.M
                                                                                                                                                                                                                                                                                                                                                                                 PIM: PROLINES AT THE THIRD POSITION OF THE TRIPEPTIDE REPEATING UNIT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS.

PTM: TYPE IV COLLAGENS CONTAIN UNDERFOUS CYSTEILE RESIDUES WHICH ARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULPIDE BONDING. 12 THESE, LOCATED IN THE NC1 DOMAIN, ARE CONSERVED IN ALL KNOWN TY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mb of contiguous nucleotide sequence from chromosome III ans.";
                                                                                                                                                                                                                                                        ween the Swiss Institute of Bioinformatics Institute.
                                                                                                                                                                                                                                                                                                                             DISEASE: MUTATIONS IN THIS GENE CAUS LETHALITY DURING LATE EMBRYOGENESIS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    DOMAINS
                                                                                                                                                                                                                                                                                                                                                                      IV COLLAGENS
                                                                                                                                                                                                                                     SWISS-PROT entry is copyright. It is produced through sen the Swiss Institute of Bioinformatics and the Eburopean Bioinformatics Institute. There are no restruction by non-profit institutions as long as its content
                                                                         B34476; B34476.
S13651; S13651.
                                                                                                       X56979; CAA40299.1;
Z27078; CAA81584.1;
J05067; AAB59179.1;
PFQ1413;
                                                                                                                                                                                                                       non-profit institu
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PubMed=1996137;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Nematoda; Chromadorea; Rhabditida; Rhabditoidea; rinae; Caenorhabditis.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         by mutations in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             J.M.;
                                                                                                                                                                                                                       is not removed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       COLLAGEN HAVE A NONCOLLAGENOUS
                                                                                                                                                                                                                                                                                                                                                CAUSE TEMPERATURE-SENSITIVE
                                                                                                                                                                                                        (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             basement membrane
                                                                                                                                                                                                                       Usage
                                                                                                                                                                                                                           bу
                                                                                                                                                                                                                                                              restrictions
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   N-TERMINAL
                                                                                                                                                                                                                               and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Shownkeen R.,
                                                                                                                                                                                                                                                                                   EMBL
                                                                                                                                                                                                                                                                                                                                                                                         NDING. 12 OF
KNOWN TYPE
                                                                                                                                                                                                                                                                                                  a collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      S OF THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     collagen
                                                                                                                                                                                                                               for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  of C
                                                                                                                                                                                                                                                                                   outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MAY
                                                                                                                                                                                                                                                no
                                                                                                                                                                                                                                                              on
                                                                                                                                                                                                                                              way
```

```
STERRE TERRET TE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           QΥ
              ACC DATE OF THE PROPERTY OF TH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 CA24_MOUSE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CONFLICT
CONFLICT
CONFLICT
CONFLICT
CONFLICT
CONFLICT
CONFLICT
CONFLICT
CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DISULFID DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DISULFID DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PROPEP
CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Repeat; Hydroxylation; SIGNAL 1 ?
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             VARIANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           VARIANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            P08122; Q61375;
01-AUG-1988 (Rel. 08, Created)
01-FEB-1991 (Rel. 17, Last sequence up
30-MAY-2000 (Rel. 39, Last annotation
COLLAGEN ALPHA 2(IV) CHAIN PRECURSOR.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         CA24_MOUSE
P08122; Q6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1630 IRPYISRCAV 1639
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1570
Kaytes P., Wood L., Theriault N., Kurkhuch Pr., Pagen genes.";
"Head-to-head arrangement of murine type IV collagen genes.";
J. Biol. Chem. 263:19274-19277(1988).
                                                                                                                                                                                SEQUENCE FROM N.A.

MEDLINE=89197933; PubMed=2703491;

MEDLINE=89197933; PubMed=2703491;

Saus J. Quinones S., Mackrell A., Blumberg

Pihlajaniemi T., Kurkinen M.;

"The complete primary structure of mouse alph

Alignment with mouse alpha 1(IV) collagen.";

J. Biol. Chem. 264:6318-6324(1989).
                                                                                                                                                                                                                                                                                                                                                                                                     Eukaryota; Metazoa;
Mammalia; Eutheria;
NCBI_TaxID=10090;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COL4A2
                                                                      MEDLINE-89066738; PubMed=3198626; Kaytes P., Wood L., Theriault N.,
                                                                                                                           SEQUENCE OF 1-33 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          musculus (Mouse)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         RAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTFALMPMNMAPITGRA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                LEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RASGODLGOPGSCLSKFNTMPFMFCNMNSVCHVSSRNDYSFWLSTDEPMTPMMNPVTGTA 1629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        45;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             259
302
366
581
768
813
830
1275
1722
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1582
1594
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1659
1693
1705
402
408
408
1514
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1549
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   7194
1758
1529
1758
1640
1637
1600
1754
1751
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        263
304
404
581
.768
814
830
1275
                                                                                                                                                                                                                                                                                                                                                                                                                                        Chordata;
Rodentia;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                64.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   170857
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              OR 1637 (BY SIMILARITY).
OR 1640 (BY SIMILARITY).
BY SIMILARITY).
BY SIMILARITY).
OR 1751 (BY SIMILARITY).
OR 1754 (BY SIMILARITY).
BY SIMILARITY).
BY SIMILARITY G34).
G -> E (IN MUTANT G33/HC70).
P -> Q (IN REF. 3).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                D -> V (IN REF. )
P -> T (IN REF. )
P -> L (IN REF. )
P -> L (IN REF. )
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PVGPA -> LSDQLV (IN REF 2LDN -> AGQR (IN REF 2).

MISSING (IN REF 2).

G -> R (IN REF 2).

P -> R (IN REF 2).

P -> T (IN REF 2).

P -> V (IN REF 2).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AMINO-TERMINAL PROPEPTIDI COLLAGEN ALPHA 1(IV) CHATRIPLE-HELICAL REGION.
NONHELICAL REGION (NC1).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 252; DB 1
Pred. No. 3e-22;
8; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                GFPGMPGLAGPPGOSGONGNPGRPGLSGPPGEGGVNSQGR
KGVKGESGRSGVPGLP -> VSDLSKSDICNIIHLSDVVS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  KDAKELKENLEDQEFQVFQ (IN REF. 2).
PVGPA -> LSDQLV (IN REF. 2).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       VLRVSLECPDLLDLQGNLDKTETLDDQDSPDHQEKEVS]
                                                                                                                                                                                                                                                                                                                                                                                                                                        Craniata; Vertebrata; Euteleostomi; Sciurognathi; Muridae; Murinae; Mus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   7083D9AF63E05D45 CRC64;
                                                                         Kurkinen
                                                                                                                                                                                                                                              mouse alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                1707
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Basement membrane
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AA
                                                                         M., Vogeli G.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PROPERTIDE
                                                                                                                                                                                                                                                                                                      В.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Signal
                                                                                                                                                                                                                                                 2(IV) collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 1758;
                                                                                                                                                                                                                                                                                                         Muthukumaran
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            (IN REF.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                 Murinae; Mus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (7S
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  2).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      DOMAIN).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            61
```

0;

```
Kurkinen M., Condon M.R., Blumberg B., Barlow D., Saus J., Pihlajaniemi T.;
"Extensive homology between the carboxyl-terminal alpha 1(IV) and alpha 2(IV) collagen.";
J. Biol. Chem. 262:8496-8499(1987).
entities requires a license agreement (S or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                      <del>:</del>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Kurkinen M., Bernard "Characterization of alpha 2(IV) collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Schwarz-Magdolen U., Oberbaeumer I., Kuehn K.; "cDNA and protein sequence of the NC1 domain of th collagen IV and its comparison with alpha 1(IV)."; FEBS Lett. 208:203-207(1986).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     "Structure of mouse type IV collagen. Amino-auterminal 511-residue-long triple-helical segme chain and its comparison with the alpha 1(IV) Eur. J. Biochem. 157:49-56(1986).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDLINE=86220192;
Schwarz U., Schupp
Deutzmann R., Timp
                                                                                                                                                                                                                                                                                <del>'</del>
                                                                                                                                                                                                                                                                                                                                                                                        -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE-87005245; PubMed=3758345;
Vogeli G., Horn E., Carter J., Ka
"Proposed alignment of helical in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              MEDLINE-89071759;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE OF 1-60 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               alpha 2(IV) collagen gene
Nature 317:177–179(1985).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE=85296379;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE OF 964-1003; 1005-1085
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE OF 1041-1489 FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE=87250460;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MEDLINE-87054581;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               9
                                                                             SWISS-PROT entry is copyright. It is produced through a collaboration ween the Swiss Institute of Bioinformatics and the EMBL outstation - European Bioinformatics Institute. There are no restrictions on its
                                                                                                                                                                                     DOMAIN (NC1) AT THEIR C-TERMINUS, FREQUENT INTERRUPTIONS OF THE G-X-Y REPEATS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH ME CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL TRIPLE-HELICAL 75 DOMAIN.

PTM: PROLINES AT THE THIRD POSITION OF THE TRIPEPTIDE REPEATING UNIT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS.

PTM: TYPE IV COLLAGENS CONTAIN UNDERFOUS CYSTEINE RESIDUES WHICH ARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULFIDE BONDING. 12 THESE, LOCATED IN THE NC1 DOMAIN, ARE CONSERVED IN ALL KNOWN TYPE
                                                                                                                                                                                                                                                                                                                                                                             SUBUNIT: THERE ARE SIX TYPE IV COLLAGEN ISOFORMS, ALPHA 1(IV)-ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELIX STRUCTURE WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN NETWORK.

DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     basement
                                                                                                                                                                          COLLAGENS.
                                          non-profit institu
and this statement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ဓ္
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            윾
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 nt membrane (type 206:29-32(1986).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1481-1707
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1480-1707 FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Schuppan
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            970-1480 FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1707 FROM N.A. Pubmed=3597383;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PubMed=3200851;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PubMed-3839908;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         PubMed=3780963;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PubMed=3011432;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       n D., Oberbaeumer
R., Kuehn K.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              M.P., Barl
[ 64-, 123-
n gene.";
                                                              institutions as long as
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Barlow D.P.,
                                       is not removed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   interruptions
IV) collagen.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      and 182-base-pair
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Kaytes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  AND 1087-1109
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Kuehn K.;
1 domain of the alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Ι.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Amino-acid sequence cal segment of the al
                   (See http://www.isb-sib.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             P.S.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Chow L.T.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Glanville
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ä
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FROM
                                                              its content
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         exons
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       peptides of mouse
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Quinones
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         two
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         'n
                                          and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      subunits
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     of.
                                                                                                                                                                                       DUES WHICH
DNDING. 12 OF
KNOWN TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         the mouse
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               2-chain
                                          for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             the C-
a 2(IV)
                      .ch/announce/
                                                              in no
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           of.
                                                                                                                                                                                                                                                                                                                                          MAY
                                                              way
```

CCCRRTAX RRARE RRARE

```
Ş
   AC DATE DATE OF THE REPORT OF THE PROPERTY OF 
                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT 11
CA24_HUMAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local
                                                                                                                                                                                                                                                                01-AUG-1988
01-FEB-1991
01-OCT-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             DOMAIN
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
                                                                                                                                                                                                                                                                                                                                                      CA24_HUMAN
P08572;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1577
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CONFLICT
CONFLICT
SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SIGNAL
PROPEP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1519
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Pfam;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   EMBL;
                                                                                                                  Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                       COLLAGEN ALPHA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Glycoprotein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          InterPro; IPR000087; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EMBL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     EMBL;
SEQUENCE FROM N.A.
MEDLINE=89066769;
                                                                                NCBI_TaxID=9606
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Extracellular
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Pfam;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MGD; MGI:88455;
                                                                                                                                                                               Homo sapiens (Human)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        CONFLICT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              61 ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1 QRAHGQDLGTLGSCLQRETTMPELECNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR ::|| |||| ||| || ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|| ||:|
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    J04695; AAAS0293.1;
J04448; AAAS7438.1;
X046447; CAA28308.1;
X04647; CAA28398.1;
M15833; AAAS7341.1;
X04410; CAA27998.1;
X04410; CAA26655.1;
X02896; CAA26655.1;
X02897; CAB51614.1;
X02897; CAB51614.1;
X02897; CAA26657.1;
X02899; CAA26658.1;
X02899; CAA26658.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EIKPYISRCSV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        EKAHNQDLGLAGSCLARFSTMPFLYCNPGDVCYYASRNDKSYWLSTTA--PLPMMPVAEE 1576
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PF01413; C4; 2.
PF01391; Collagen;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         P19972;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              44;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1480
11534
11544
11641
11641
11653
11270
11051
1107
1107
11179
11179
11179
11179
11179
11241
11328
11573
                                                                                                                                                                                                     (Rel. 08, Created)
(Rel. 17, Last sequence update)
(Rel. 40, Last annotation updat
PHA 2(IV) CHAIN PRECURSOR.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A33526.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    matrix; Co; Basement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   1KVD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                AAA51626
                                                                                                                                                                                                                                                                                                                                                                                     STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Co14a2.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ΑĄ,
   PubMed=3198637
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                183
1707
1479
1707
1588
1588
1580
1703
1703
1703
1703
1700
1660
138
138
1270
1051
1171
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1623
                                                                                                                     Chordata;
Primates;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      62.6%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               167391
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Connective
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          membrane;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ......
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   JOINED.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Score 244; DB
Pred. No. 2.6e
10; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ¥.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     OR 1585 ()
OR 1585 ()
OR 1700 ()
BY SIMILA
OR 1700 ()
OR 1700 ()
OR 1703 ()
OR 1700 ()
O
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            TRIPLE-HELICAL REGION.
NONHELICAL REGION (NC1).
OR 1585 (BY SIMILARITY).
OR 1588 (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    AMINO-TERMINAL COLLAGEN ALPHA
                                                                                                                                             Craniata; Vertebrata; Euteleostomi;
                                                                                                                     Catarrhini;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             R 1703 (BY SI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Collagen;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         tissue;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             # C
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          XED (GLCNAC. . . (IN REF. 6). 3 (IN REF. 6). 5 (IN REF. 6). 7 (IN REF. 6). 4 (IN REF. 6). 4 (IN REF. 4). 4 (IN REF. 4).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (BY SIMILARITY).
                                                                                                                                                                                                                                                                   update)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (GLCNAC.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  159605FD508
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            υΒ 1;
?.6e-21;
?s 15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Repeat;
                                                                                                                                                                                                                                                                                                                                                                                     Ä
                                                                                                                     Hominidae;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Signal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PROPERTIDE 2(IV) CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Hydroxylation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   60
```

1;

```
J. Biol.
[2]
                                                                     Siebold B., Deutzmann R., Kuehn K.;

"The arrangement of intra- and intermolecular disulfide bonds in carboxyterminal, non-collagenous aggregation and cross-linking do of basement-membrane type IV collagen.";

Eur., J. Biochem. 176:617-624(1988).

-i- FUNCTION: TYPE IV COLLAGEN IS THE MAJOR STRUCTURAL COMPONENT.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Brazel D., Poliner R., Oberbaeumer I., Kuehn K.;
"Human basement membrane collagen (type IV). The amino acid sequence of the alpha 2(IV) chain and its comparison with the alpha 1(IV) chain reveals deletions in the alpha 1(IV) chain.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Soininen R., Huotari M., Hostikka S.L., Prockop D.J., Tr
"The structural genes for alpha 1 and alpha 2 chains of
collagen are divergently encoded on opposite DNA strands
overlapping promoter region.";
J. Biol. Chem. 263:17217-17220(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE OF 1451-1485 FROM N.A. MEDLINE=87092438; PubMed=3025878; Griffin C.A., Emanuel B.S., Hansen J.R.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE OF 1254-1712 FROM N.A. MEDLINE=87219158; PubMed=3582677; Hostikka S.L., Kurkinen M., Trygg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Hostikka
"The comp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Poeschl E., Pollner R., Kuehn K.,
"The genes for the alpha 1(IV) and alpha 2(IV) chains of human
basement membrane collagen type IV are arranged head-to-head ar
separated by a bidirectional promoter of unique structure.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      MEDLINE-87250571; pubMed=2439508; Myers J.C., Howard P.S., Jelen A.M., Dion A.S., Macarak E.J. "Duplication of type IV collagen COOH-terminal repeats and specific expression of alpha 1(IV) and alpha 2(IV) collagen J. Biol. Chem. 262:9231-9238(1987).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       TISSUE=Placenta; MEDLINE=88151998; PubMed=3345760;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SEQUENCE OF 1-1042 FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 collagen
                                                                                                                                                                                                                                                                                                                                                                                                        TISSUE=Placenta;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  "Identification of a novel sequence element in the common promoter region of human collagen type IV genes, involved in the regulation divergent transcription.";
Biochem. J. 292:687-695(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       MEDLINE=89030632; PubMed=2846280;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SEQUENCE OF 1-33 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE OF 1-33 FROM N.A.
MEDLINE=89034231; PubMed=3182844;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      #BDLINE=8/219150, Furnine M., Tryggvason K.;
Hostikka S.L., Kurkinen M., Tryggvason K.;
**Nucleotide sequence coding for the human type
**Nucleotide sequence coding for the h
                                                                                                                                                                                                                                                                                                                                                          MEDLINE=89005112; PubMed=2844531;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 TISSUE=Skin;
                                                                                                                                                                                                                                                                                                                                                                                                                                                       SEQUENCE OF 1480-1535;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE OF 1-33 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              œ
GLOMERULAR BASEMENT MEMBRANES (GBM), FORMING A MESHWORK TOGETHER WITH LAMININS, PROTEOGLYCANS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ikka S.L., Tryggvason K.; complete primary structure of the agen and comparison with the alpha iol. Chem. 263:19488-19493(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     but not with the collagenous domain or 3'-untranslated region."; Lett. 216:281-286(1987).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  collagen genes encoding basement membrane alpha 1 (IV) 2 (IV) chains map to the distal long arm of chromosome Natl. Acad. Sci. U.S.A. 84:512-516(1987).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          7:2687-2695(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Biochem. 172:35-42(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OF 1486-1712 FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                  1545-1614;
                                                                                                                                                                                                                                                                                                                                                                                                                                                  1617-1701
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            alpha
1(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Cavenee
                                                                                                                                                                                                                                                                                                                                                                                                                                                  AND 1705-1712
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2 chain of human type IV
chain.";
                                                                                                                                                                                                                    disulfide bonds in the and cross-linking domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           IV collagen
NC-1 domain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Macarak E.J.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          w.K.,
alpha
    AND
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    collagen genes.";
                                              'CHICKEN-WIRE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            , Tryggvason K.;
of human type IV
ands and have an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                yers J.C.;
1 (IV) and
2 mosome 13.";
    ENTACTIN/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      of alpha 2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  species-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        J.C.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ٧I
```

RESULT 12 CA64_HUMAN

H

CA64_HUMAN

STANDARD;

밁

1582

EIKPYISRCSV ALEPYISRCTV

1592

밁 γQ

1524

QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60 EKAHNQDLGLAGSCLARFSTMPFLYCNPGDVCYYASRNDKSYWLSTTA--PLPMMPVAED 1581

61

Query Match Best Local S Matches 44

Similarity

62.1%; 62.0%;

Conservative

10;

Score 242; DB Pred. No. 4.5e l0; Mismatches

242; DB 1; No. 4.5e-21;

Length 1712;

2;

Gaps

μ,

```
DISULFID DISULFID DISULFID DISULFID
                                 CONFLICT
                                                                     DISULFID CARBOHYD
                                                                                                                                                                                                                                                                                                    EMBL;
                                                                                                                                                                                                                                                                                                                           EMBL;
                                                                                                                                                                                                                                                                                                                                                                                  modified and this statement is not removed. entities requires a license agreement (See or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                         This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -!- SUBUNIT: THERE ARE SIX TYPE IV COLLAGEN ISOFORMS, ALPHA 1(IV)-
ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELIX STRUCTURE
WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN NETWORK.

-!- DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS
DOMAIN (NCI) AT THEIR C-TERMINUS, FREQUENT INTERRUPTIONS OF THE
G-X-Y REPEATS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH MAY
CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL
TRIPLE-HELICAL 7S DOMAIN.
-!- PTM: PROLINES AT THE THIRD POSITION OF THE TRIPEPTIDE REPEATING
UNIT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS.
-!- PTM: TYPE IV COLLAGENS CONTAIN NUMEROUS CYSTEINE RESIDUES WHICH
ARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULFIDE BONDING. 12 OF
THESE, LOCATED IN THE NCI DOMAIN, ARE CONSERVED IN ALL KNOWN TYPE
IV COLLAGENS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  <u>.</u>;
                                                                                                                                                                          CHAIN
                                                                                                                                                                                                                                                                              PIR; A32024; A32024.
MIM; 120090; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                <del>-</del>
 SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                   the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    -
             CONFLICT
                       CONFLICT
                                                           CONFLICT
                                                                                                                                                   DOMAIN
                                                                                                                                                                 DOMAIN
                                                                                                                                                                                                 Glycoprotein;
SIGNAL
                                                                                                                                                                                                                                 Pfam; PF01413; C4; 2.
Pfam; PF01391; Collagen;
                                                                                                                                                                                      PROPEP
                                                                                                                                                                                                                        Extracellular
                                                                                                                                                                                                                                                        InterPro; IPR000087;
InterPro; IPR001442;
                                                                                                                                                                                                                                                                                                                                                                                                                                s SWISS-PROT entry is copyright. It is produ
ween the Swiss Institute of Bioinformatics
European Bioinformatics Institute. There a
                                                                                                                                                                                                                                                                                                    X05562;
X05610;
J02760;
J02760;
M36963;
X12784;
J04217;
                                                                                                                                                                                                                                                                                                                                                                                                                        non-profit
            1646
1658
138
471
683
1575
1663
                                                                                                                 1485
1504
1537
1549
                                                                                                        1612
                                                                                                                                                               26
184
184
                                                                                                                                                                                                                                                                                                     CAA29076.1; -... CAA32098.1; -... AAA54022.1; -... AAA53099.1; -... CAA31275.1; -... AAA53097.1; -...
                                                                                                                                                                                                           matrix; Connective tissue; Repeat; F
Basement membrane; Collagen; Signal.
AA;
            183
1712
1712
1590
1590
1595
1705
1705
1665
1705
1665
1705
16683
1705
                                                                                                                                                                                                                                                                                                                                                                                                                       institutions as long
 167535
                                                                                                                                                                                                                                   20
  MW;
          BY SIMILARITY,
N-LINKED (GLORAC.
R -> P (IN REF. 2
A -> G (IN REF. 2
M -> I (IN REF. 5
G -> H (IN REF. 9)
H -> G (IN REF. 9)
                                                                                          OR 1705
OR 1708
                                                                                                                                                               TRIPLE-HELICAL
                                                                                                                                                                          AMINO-TERMINAL COLLAGEN ALPHA
                                                                                                                                                   NONHELICAL REGION (NC1).
                                                                                                                1590 (BY SIMILARITY)
1593 (BY SIMILARITY)
SIMILARITY.
 2582A17847890037
          (IN REF. 2).
(IN REF. 2).
(IN REF. 5).
(IN REF. 9).
(IN REF. 9).
                                                                                            (BY SIMILARITY). (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                (See http://www.isb-sib.ch/announce,
                                                                                                                                                                                                                                                                                                                                                                                                                                                       is produced through
                                                                                                                                                                                                                                                                                                                                                                                                                               There are
                                                                                                                                                                                                                                                                                                                                                                                                                     as its content
                                                                                                                                                                                      PROPERTIDE
                                                                                                                                                                             2(IV)
                                                                                                                                                                                                                                                                                                                                                                                                         Usage
                                                                                                                                                                                                                                                                                                                                                                                                                                               and
                                                                                                                                                                                                                      Hydroxylation;
                                                                                                                                                                                                                                                                                                                                                                                                                                   no
                                                                                                                                                                            CHAIN
 CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                            bу
                                                                                                                                                                                                                                                                                                                                                                                                                                              the
                                                                                                                                                                                                                                                                                                                                                                                                                                  restrictions
                                                                                                                                                                                      (7S DOMAIN)
                                                                                                                                                                                                                                                                                                                                                                                                            and
                                                                                                                                                                                                                                                                                                                                                                                                                                               EMBL
                                                                                                                                                                                                                                                                                                                                                                                                                                              a collaboration
                                                                                                                                                                                                                                                                                                                                                                                                            for commercia
                                                                                                                                                                                                                                                                                                                                                                                                                        ij
                                                                                                                                                                                                                                                                                                                                                                                                                         no
```

Query Match Best Local

Similarity

60.3%;

Score Pred.

235;

Length 1678;

; DB 1; 3.le-20;

```
888888888888888888888888888888888888
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "Identification of a new collagen IV ch
isolation and assignment of the gene to
same locus for COL4A5";
J. Biol. Chem. 269:7520-7526(1994).
-!- FUNCTION: TYPE IV COLLAGEN IS THE M
GLOMERULAR BASEMENT MEMBRANES (GBM)
MESIWORK TOGETHER WITH LAMININS, PR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    01-NOV-1997
01-NOV-1997
01-OCT-2000
           DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
                                                                                                       SITE
                                                                                                                    SITE
                                                                                                                                                                                                   Repeat;
                                                                                                                                                                                                                                                                                                                                              use by non-profit institutions as long modified and this statement is not removed. entities requires a license agreement (See
                                                                                                                                                                                                                                      InterPro; IPR000087; -.
InterPro; IPR001442; -.
Pfam; PF01413; C4; 2.
Pfam; PF01391; Collagen; 21.
                                                                                                                                                                                                                                                                                                                                                                                                                   This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE=94171779; PubMed=8125972; Oohashi T., Sugimoto M., Mattei M.-G.,
                                                                                                                                                                                                              Extracellular matrix; Connective tissue; Basement membrane; Repeat; Hydroxylation; Glycoprotein; Cell adhesion; Collage
                                                                                                                                                                                                                                                                                             EMBL; D21337; BAA04809.1; MIM; 303631; -.
                                                                                                                                                                                                                                                                                                                                                                                         the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COL4A6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COLLAGEN ALPHA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             014031;
                                                                                                                                              DOMAIN
                                                                                                                                                            DOMAIN
                                                                                                                                                                         DOMAIN
                                                                                                                                                                                                                                                                                                                                                                                                     between
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE FROM N.A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Eukaryota; Metazoa;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PTM: PROLINES AT THE THIRD POSITION OF THE TRIPEPTIDE REPEATING UNIT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS. PTM: TYPE IV COLLAGENS CONTAIN UNMEROUS CYSTEILE RESIDUES WHICH ARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULFIDE BONDING. 12 THESE, LOCATED IN THE NC1 DOMAIN, ARE CONSERVED IN ALL KNOWN TY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SUBUNIT: THERE ARE SIX TYPE IV COLLAGEN ISOFORMS, ALPHA 1(IV)-ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELIX STRUCTURE WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN NETWORK.
SUBCELLULAR LOCATION: CELL SURPACE (POTENTIAL).
DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DOMAIN (NC1) AT THEIR C-TERMINUS, FREQUENT INTERRUPTIONS OF THE G-X-Y REPEATS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL TRIPLE-HELICAL 7S DOMAIN.
                                                                                                                                                                                                                                                                                                                                                                          European Bioinformatics Institute. The by non-profit institutions as long
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NIDOGEN.
SUBUNIT: THERE
                                                                                                                                                                                                                                                                                                                                                                                                                                          SIMILARITY: TO OTHER TYPE IV COLLAGENS
                                                                                                                                                                                                                                                                                                                                                                                                 SWISS-PROT entry is copyright. It is produced through een the Swiss Institute of Bioinformatics and the EM
                                                                                                                                                                                                                                                                                                                                                                                                                                                           COLLAGENS
                                                                                                                                                                                                                                                                                                                                    an
                         1451
514
559
985
1469
1502
1514
1577
1611
1623
                                                                                                                                                                                                                                                                                                                                  equires a license agreement (S email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    7 (Rel.
7 (Rel.
) (Rel.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                and Kidney;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (Human)
A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      35,
40,
                                                  1450
1678
516
561
987
1558
1555
1574
                                                                                                                                                                                     1678
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Primates;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Chordata;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        , Created)
, Last sequence update)
, Last annotation update)
CHAIN PRECURSOR.
162461
                                                                                                 COLLAGEN ALPHA 6(IV) CHAIN.
7S DOMAIN.
TRIPLE-HELICAL REGION.
NONHELICAL REGION (NC1).
CELL ATTACHMENT SITE (POTENTIAL).
CELL ATTACHMENT SITE (POTENTIAL).
CELL ATTACHMENT SITE (POTENTIAL).
¥
                       OR
OR
OR
OR
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Craniata; Vertebrata; Euteleostomi; Catarrhini; Hominidae; Homo.
            LINKED
                       SIMILARITY.

1671 (BY SIMILARITY).

1674 (BY SIMILARITY).

SIMILARITY.
                                                                          1555 (BY SIMILARITY).
1558 (BY SIMILARITY).
65E4EA282D3D37BD CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        THE MAJOR STRUCTURAL COMPONENT (GBM), FORMING A 'CHICKEN-WIRE' NS, PROTEOGLYCANS AND ENTACTIN/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ç
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        chain, alpha
            (GLCNAC
                                                                                                                                                                                                                                                                                                                                               (See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ninomiya
                                                                                                                                                                                                                                                                                                                                                                        There are no rest
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           chromosome
                                                                                                                                                                                                                                                                                                                                                          Usage
           .) (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        6(IV),
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           xq22,
                                                                                                                                                                                                            Collagen; Signal
                                                                                                                                                                                                                                                                                                                                                             γď
                                                                                                                                                                                                                                                                                                                                                                                      ne EMBL outstation restrictions on it
                                                                                                                                                                                                                                                                                                                                                              and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           by cDNA which is
                                                                                                                                                                                                                                                                                                                                                                           ST.
                                                                                                                                                                                                                                                                                                                                                                                                                 ø
                                                                                                                                                                                                                                                                                                                                                              for
                                                                                                                                                                                                                                                                                                                                                                                                                 collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ST.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      12 OF
                                                                                                                                                                                                                                                                                                                                                              commercial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OH.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MAY
                                                                                                                                                                                                                                                                                                                                                                           no
on
```

```
CA44_HMAN
ID—CA44_H
ID—CA44_H
ID—CA44_H
ID—CA44_H
ID—CA10-CT
DT 01-CCT
DT 01
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Дb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
                                                                                                         Pirson Y., Verellen-Dumoulin C., Chan B., Smeets H.J., Reeders S.T.,
"Identification of mutations in the alpha collagen genes in autosomal recessive Alpo Nat. Genet. 8:77-82(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       1547
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              1489
         Lemmink H.H., Nil
Brunner H.G., var
"Benign familial
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "Isolation and sequencing of cDNAs and genomic DNAs alpha 4 chain of basement membrane collagen type IV the gene to the distal long arm of human chromosome j. Biol. Chem. 267:23753-23758(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "cDNA isolation and partial gene collagen chain."; FEBS Lett. 330:122-128(1993).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COLLAGEN ALPHA 4(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   01-OCT-1996
01-OCT-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             P53420;
01-OCT-1996
                           VARIANT BEH GLU-897.
MEDLINE-96379660; PubMed-8787673;
Lemmink H.H., Nillesen W.N., Moch
Brunner H.G., van Oost B.A., Monn
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           CA44_HUMAN
                                                                                                                                                                                                                                                 MEDLINE=95078927; PubMed=7987396; Mochizuki T., Lemmink H.H., Mariy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE-93054733; PubMed=1429714; Kamagata Y Mattol M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE-93374047; PubMed-8365481;
Sugimoto M., Oohashi T., Yoshioka H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           chain.
                                                                                                                                                                                                                                                                                               VARIANT AS
                                                                                                                                                                                                                                                                                                                                                                                      Lemmink H.H.,
                                                                                                                                                                                                                                                                                                                                                                                                           MEDLINE=97338662;
                                                                                                                                                                                                                                                                                                                                                                                                                                  REVIEW
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Kamagata Y., Mattei M.-G., Ninomiya Y.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               FISSUE=Eye;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Leinonen A., Mariyama M., Mochizuki T., Tryggvason K., Reeders ("Complete primary structure of the human type IV collagen alpha chain. Comparison with structure and expression of the other alp (IV) chains.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  TISSUE=Kidney;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SEQUENCE FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   łomo sapiens (Human)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IEDLINE=95014445; PubMed=7523402;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     سر
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR
                                                                                                                                                                                                                                                                                                                                                             clinical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       QIPQYISRCSV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            EKAHNQDLGFAGSCLPRFSTMPFIYCNINEVCHYARRNDKSYWLSTTA--PIPMMPVSQT 1546
                                                                                                                                                                                                                                                                                                                                                                                        ON VARIANTS.
---07338662; PubMed=9195222;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Chem.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Eutheria;
                                                                                                                                                                                                                                                                                               SER-1201.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (Rel. 34, Creat
(Rel. 34, Last
(Rel. 40, Last
                                                                                                                                                                                                                                                                                                                                        ., Schroeder C.H., Mal spectrum of type 9:477-499(1997).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1219-1690
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               269:26172-26177(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               34, Created)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Chordata;
Primates;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CHAIN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    FROM
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          sequence update) annotation updat PRECURSOR.
           due to
Mochizuki T., Schroum
Monnens L.A.H., Smeet
Monnens of the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Craniata; Vertebrata; Euteleostomi; Catarrhini; Hominidae; Homo.
                                                                                                                                                                                                                                                                                                                                                                                      Monnens L.A.H.,
                                                                                                                                                                                                                                                                                                                                                               I۷
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 structure of the
                                                                                                                                                                                                                                                                                                                                                             collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1690
                                                                                                                                                              Alport
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ΑA
                                                                                                                                                                                                                              Antignac C., Schroeder
                                                                                                                                                                                     3(IV) and
                             Schroeder C.F.
                                                                                                                                                                                                                                                                                                                                                               mutations
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Z
,
                                                                                                                                                              syndrome
                                                                                                                                                                                                                                                                                                                                                                                      Smeets
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Ninomiya Y.;
e human alpha
                                                                                                                                                                me.";
                                                                                                                                                                                                                              ., Gubler M.-C., C.H.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         encoding
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                and assignment
2.";
                                                                                                                                                                                                                                                                                                                                                                    .¶.J.
           collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 4 (IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S.T.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                4 (IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       of.
```

CCCCCCCCRTTRAX RRL

```
FITTITI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Boye E., Mollet G., Forestier L., Cohen-Solal L., Heidet L., Cochat P., Gruenfeld J.-P., Palcoux J.-B., Gubler M.-C., Antignac "Determination of the genomic structure of the COL4A4 gene and of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   alpha4 gene.";
J. Clin. Inves
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ----
              CHAIN
DOMAIN
DOMAIN
DOMAIN
SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 nove
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE=99011253; PubMed=9792860;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                VARIANTS AS,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MIM;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MIM;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             modified and this statement is not removed entities requires a license agreement (See or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1
                                                                                                                                                                                                                                                Pfam; PFU1391; corrective tissue; Baseme Extracellular matrix; Connective tiss
                                                                                                                                                                                                                                                                                                                   InterPro; IPR000087; -.
InterPro; IPR001442; -.
pfam; PF01413; C4; 2.
pfam; PF01391; Collagen; 20.
                                                                                                                                                                                        SIGNAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 EMBL;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           NIDOGEN.
SUBURIT: THERE ARE SIX TYPE IV COLLAGEN ISOFORMS, ALPHA 1(IV)-
ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELLX STRUCTURE
WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN NETWORK.
SUBCELULIAR LOCATION: CELL SURFACE (POTENTIAL).
TISSUE SPECIFICITY: ALPHA 3 AND ALPHA 4 TYPE IV COLLAGENS ARE
COLOCALIZED AND PRESENT ONLY IN BASEMENT MEMBRANES OF KIDNEY,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DISEASE: DEFECTS IN COL4A4 ARE ASSOCIATED WITH FAMILIAL BENIGN EMBATURIA (FBH) OR THIN BASEMENT MEMBRANE DISEASE. FBH IS CHARACTERIZED BY PERSISTENT HEMATURIA, AN ELECTRON MICROSCOPICA DEFECTABLE THIN GLOWERULAR BASEMENT MEMBRANE (GBM) AND AN AUTOSOMAL DOMINANT MODE OF INHERITANCE. RENAL FUNCTION REMAINS NORMAL. IN CHILDREN DIFFERENTIATION BETWEEN FBH AND AS CAN BE DIFFICULT, BECAUSE BOTH DISORDERS ARE MANIFESTED BY PERSISTENT HEMATURIA AND THIN GBM AT THAT AGE.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      el mutations causing autosomal recessive Alport syndrome.";
J. Hum. Genet. 63:1329-1340(1998).
FUNCTION: TYPE IV COLLAGEN IS THE MAJOR STRUCTURAL COMPONENT
GLOMERULAR BASEMENT MEMBRANES (GBM), FORMING A 'CHICKEN-WIRE'
GESHWORK TOGETHER WITH LAMININS, PROTEOGLYCANS AND ENTACTIN/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                s SWISS-PROT entry is copyright. It is produced through a collaboration ween the Swiss Institute of Bioinformatics and the EMBL outstation on its European Bioinformatics Institute. There are no restrictions on its by non-profit institutions as long as its content is in no way
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           PTM: PROLINES AT THE THIRD POSITION OF THE TRIPEPTIDE REPEATING UNIT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS.
PTM: TYPE IV COLLAGENS CONTAIN UNMERGUS CYSTEILE RESIDUES WHICH ARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULFIDE BONDING. 12 THESE, LOCATED IN THE NC1 DOMAIN, ARE CONSERVED IN ALL KNOWN TY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DISEASE: DEFECTS IN COL4A4 ARE ASSOCIATED WITH THE AUTOSOMAL RECESSIVE FORM OF ALPORT STREAMED AS A GLOMERULONEPHROPACHY CHARACTERIZED BY PROGRESSIVE HEMATURIA AND DEAFNESS. THE RECESSIVE FORM OCCURS E
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DOMAIN (NC1) AT THEIR C-TERMINUS, FREQUENT INTERRUPTIONS OF G-X-Y REPEATS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHI CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMIN TRIPLE-HELICAL 7S DOMAIN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        COCHLEA, LUNG AND BRAIN.

DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE A NONCOLLAGENOUS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               HEMATURIA AND DEAFNESS.
MALES AND FEMALES.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         IV COLLAGENS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ; D17391;
120131; -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     203780
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    X81053;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Invest.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       AND VARIANTS
                                                                                                                    39
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    CAA56943.1;
BAA04214.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       98:1114-1118(1996).
                 38
1690
64
1459
1690
POTENTIAL.
COLLAGEN ALPHA 4(IV) CHAIN.
7S DOMAIN.
TRIPLE-HELICAL REGION.
NONHELICAL REGION (NC1).
TOTAL AFTACHMENT SITE (POTEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    noved. Usage by and for commercial
(See http://www.isb-sib.ch/announce/
                                                                                                                                                                                                                                                       Basement membrane;
ignal; Disease muta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            WITH FAMILIAL BENIGN
DISEASE. FBH IS
ELECTRON MICROSCOPICALLY
                     (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      E RESIDUES WHICH
FIDE BONDING. 12 OF
IN ALL KNOWN TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DOMAIN (WHICH
ORT N-TERMINAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   AN HEREDITARY RENAL FAILURE,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EQUALLY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TYPE
                                                                                                                                                                                                                                                           mutation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         is
                                                                                                                                                                                                                                                                                           Repeat;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BETWEEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   THE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       in no way
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EYE,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    C . ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               MAY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            얽
```

```
RESULT 14
CA44_BOVIN
                                                                                                                                                                                                QΥ
                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                               Qγ
ID ACCOMENDATION OF STREET
                                                                                                                                                                                В
                                                                                                                                                                                                                                                 Query Match
Best Local S
Matches 37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        SITE
DISULFID
DISULFID
DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CARBOHYD
CARBOHYD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SITE
SITE
SITE
SITE
SITE
SITE
                                                                                         01-NOV-1997 (Rel. 35, Created)
01-NOV-1997 (Rel. 35, Last seq
01-OCT-2000 (Rel. 40, Last ann
01LAGEN ALPHA 4(IV) CHAIN (FR
                                                                                                                              CA44_BOVIN
Q29442;
                                                                                                                                                                                 1558
                                                                                                                                                                                                                 1500
                                                                                                                                                                                                                                                                                                                                                                                      VARIANT
                                                                                                                                                                                                                                                                                                                                                                                                       VARIANT
                                                                                                                                                                                                                                                                                                                                                                                                                                        VARIANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                         VARIANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         VARIANT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           DISULFID
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DISULFID
TISSUE=Lens;
MEDLINE=92112769;
Mariyama M., Kall:
                                                        Eukaryota; Metazoa;
Mammalia; Eutheria;
                                                                                    COL4A4
                                                                                                                                                                                                                                                                                            SEQUENCE
                                                                                                                                                                                                                                                                                                   CONFLICT
                                                                                                                                                                                                                                                                                                                    VARIANT
                                                                                                                                                                                                                                                                                                                                     VARIANT
                                                                                                                                                                                                                                                                                                                                                      VARIANT
                                                                                                                                                                                                                                                                                                                                                                      VARIANT
                                                                                                                                                                                                                                                                                                                                                                                                                        VARIANT
                                                                            Bos taurus (Bovine)
                                                  Bovidae; Bovinae;
                        SEQUENCE FROM N.A., AND SEQUENCE
                                          NCBI_TaxID=9913;
                                                                                                                                                                                                61
                                                                                                                                                                                                                                  \vdash
                                                                                                                                                                                                                           QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPLTGR
                                                                                                                                                                                       ALEPYISRCTV 71
                                                                                                                                                                                AIRPYVSRCAV 1568
                                                                                                                                                                                                                 EKAHNQDLGLAGSCLPVFSTLPFAYCNIHQVCHYAQRNDRSYWLASAA---PLPMMPLSEE
                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                                                                                                                           1659
1690
                                                                                                                                                                                                                                                                                                                    1572
                                                                                                                                                                                                                                                                                                                                                      1201
                                                                                                                                                                                                                                                                                                                                     1402
                                                                                                                                                                                                                                                                                                                                                                      1030
                                                                                                                                                                                                                                                                                                                                                                                      1004
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1212
1480
1513
1525
1588
1622
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1634
                                                                                                                                                                                                                                                                                                                                                                                                                                         570
                                                                                                                                                                                                                                                                                                                                                                                                       931
                                                                                                                                                                                                                                                                                                                                                                                                                        897
                                                                                                                                                                                                                                                   Conservative
                                                                                                                                       STANDARD;
                                                                                                                                                                                                                                                                                            AA;
                                                   Bos.
                                                                                                                                                                                                                                                                                                                     1572
                                                                                                                                                                                                                                                                                                                                      1402
                                                                                                                                                                                                                                                                                                                                                      1201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1214
1569
1566
1531
1531
1686
1683
        PubMed=1370461;
                                                                                                                                                                                                                                                                                            1660
\; 164095
                                                                                                                                                                                                                                                                                                                                                                      1030
                                                                                                                                                                                                                                                                                                                                                                                      1004
                                                                                                                                                                                                                                                                                                                                                                                                                                         570
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          446
                                                                                                                                                                                                                                                                                                                                                                                                       931
                                                                                                                                                                                                                                                                                                                                                                                                                        897
                                                                    Chordata;
                                                           Chordata; Craniata; Vertebrata; Euteleostomi; Cetartiodactyla; Ruminantia; Pecora; Bovoidea
                                                                                                                                                                                                                                                          56.9%;
                                                                                             , Last sequence up, Last annotation CHAIN (FRAGMENT)
  æ.
'
  Hudson B.G.,
                                                                                                                                                                                                                                                   16;
                                                                                                                                                                                                                                                                                            LQ ->
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         OR 1566 (BY SI)
OR 1569 (BY SI)
OR 1569 (BY SI)
BY SIMILARITY.
OR 1686 (BY SI)
BY SIMILARITY.
N-LINKED (GLCN.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CELL
CELL
CELL
CELL
                                                                                                                                                                                                                                                                                                                    /FTId=VAR_008154.
P -> L /TW -
                                                                                                                                                                                                                                                 Score 222; DB 1;
Pred. No. 1.1e-18;
6; Mismatches 16
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CELL ATTACHMENT SITE (POT
CLEAVAGE (BY COLLAGENASE)
                                                                                                                                                                                                                                                                                                                                                      G -> V (IN AS).
/FTId=VAR_008153.
G -> S (IN AS).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                          N-LINKED (GLCNAC.
N-LINKED (GLCNAC.
MISSING (IN AS).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     CELL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           (BY SIMILARITY)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /FTId=VAR_008148
                                                                                                                                                                                                                                                                                           P -> L (IN AS).
/FTId=VAR_008155.
LQ -> FE (IN REF. 2).
W; E1E72F283A72BAAE CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                              /FTId=VAR_001912
                                                                                                                                                                                                                                                                                                                                                                                                                        /FTId=VAR_008150
G -> E (IN FBH)
                                                                                                                                                                                                                                                                                                                                                                                                                                                /FTId=VAR_008149
                                                                                                                                                                                                                                                                                                                                             /FTId=VAR_001913
                                                                                                                                                                                                                                                                                                                                                                               /FTId=VAR_008152
                                                                                                                                                                                                                                                                                                                                                                                              /FTId=VAR_008151
                                                                                                                                       PRT;
                                                                                                                                                                                                                                                                                                                                                                                                                                                          v
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    L ATTACHMENT :
L ATTACHMENT :
L ATTACHMENT :
                          OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ATTACHMENT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ATTACHMENT
                                                                                                     update)
on update)
                          317-328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          (BY SIMILARITY). (BY SIMILARITY).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (BY SIMILARITY). (BY SIMILARITY).
                                                                                                                                       453
  Reeders S.T.;
                                                                                                                                       AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SITE
SITE
SITE
SITE
SITE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SITE
                                                                                                                                                                                                                                                    16;
                                                                                                                                                                                                                                                                  Length 1690;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (POTENTIAL).
(POTENTIAL).
(POTENTIAL).
(POTENTIAL).
(POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    (POTENTIAL).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             (POTENTIAL)
                                                                                                                                                                                                                                                    Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (POTENTIAL)
                                                             Bovoidea;
                                                                                                                                                                                                                                                    2
                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                    1557
```

1;

```
DOMAIN
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
DISULFID
CONFLICT
                                                                                                                                                                                                                                                                                                                          modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                                                                                                        Pfam; PF01413; C4; 2. Pfam; PF01391; Collagen; 3.
                                                                                                                                                                                                                                                                                                                                                                                   This SWISS-PROT entry is copyright. It is produced through a collaboratic between the Swiss Institute of Bioinformatics and the EMBL outstation the European Bioinformatics Institute. There are no restrictions on it use by non-profit institutions as long as its content is in no we
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 membrane collagen.";
J. Biol. Chem. 262:7874-7877(19
-i- FUNCTION: TYPE IV COLLAGEN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          alpha 4, of type IV collagen.";
J. Biol. Chem. 265:5466-5469(1990).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE=90202779; PubMed=2318822; Gunwar S., Saus J., Noelken M.E.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      cDNAs encoding
                                                                                                                                                                                                             Extracellular matrix;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           +
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MEDLINE-87222419; PubMed-2438283;
Butkowski R.J., Langeveld J.P.M., Wieslander J., Hamilton
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SEQUENCE OF 217-233.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gunwar S., Saus J., Noelken M.E., Hudson B.G.; "Glomerular basement membrane. Identification of a fourth chain,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    "The alpha 4(IV) chain of basement membrane collagen. Isolation of cDNAs encoding bovine alpha 4(IV) and comparison with other type IV
                                                                                                                                                           DOMAIN
                                                                                                                                                                                                                                                            InterPro; IPR000087; InterPro; IPR001442;
                                                                                                                                                                                                                                                                                                 EMBL; M77480; AAA30458.2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Hudson B.G.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SEQUENCE OF 217-246
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Localization of the Goodpasture epitope
                                                                                                                                                                                       lycoprotein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COLOCALIZED AND BRAIN.

COCHERA, LUNG AND FREQUENT INTERCPTIONS OF THE GRAY.

CAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL TRIPLE-RELICAL 7S DOMAIN.

PTM: PROLINES AT THE THIRD POSITION OF THE TRIPEPTIDE REPEATIN UNIT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS.

PTM: TYPE IV COLLAGENS CONTAIN NUMEROUS CYSTEINE RESIDUES WHICH ARE INVOLVED IN INTER- AND INTRAMOLECULAR DISULFIDE BONDING. ]

THERE INVOLVED IN THE NC1 DOMAIN, ARE CONSERVED IN ALL KNOWN?
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SUBCELLULAR LOCATION: CELL SURFACE (POTENTIAL).
TISSUE SPECIFICITY: ALPHA 3 AND ALPHA 4 TYPE IV COLOCALIZED AND PRESENT ONLY IN BASEMENT MEMBRANES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SUBUNIT: THERE ARE SIX TYPE IV COLLAGEN ISOFORMS, ALPHA 1 ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELIX STRUCT WITH 2 OTHER CHAINS TO GENERATE TYPE IV COLLAGEN NETWORK.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NIDOGEN.
SUBUNIT: THERE ARE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FUNCTION: TYPE IV COLLAGEN IS THE MA GLOMERULAR BASEMENT MEMBRANES (GBM),
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         SIMILARITY: TO OTHER TYPE IV COLLAGENS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MESHWORK TOGETHER
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Chem.
 53
                                                                                                                                                                                        Basement
 ΑĄ;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Jel., 1987).

STRUCTURAL COMPONENT IYPE IV COLLAGEN IS THE MAJOR STRUCTURAL COMPONENT IYPE IV COLLAGEN (GBM), FORMING A 'CHICKEN-WIRE' AND ENTACTIN/
                  222
453
332
329
294
449
404
219
 46384
                                                                                                                                                                                                             Connective
                                                                                                                                                                                        membrane;
 MW.
                                                                                                                                                                                                                                                                                               ALT_SEQ.
              TRIPLE-HELICAL REGION.
NONHECLICAL REGION (NC1).
OR 329 (BY SIMILARITY).
OR 322 (BY SIMILARITY).
BY SIMILARITY.
BY SIMILARITY.
OR 446 (BY SIMILARITY).
OR 449 (BY SIMILARITY).
BY SIMILARITY.
OR 449 (BY SIMILARITY).
BY SIMILARITY.
F7ED410AE9A65BC1
                                                                                                                                                                                       tissue; Repeat; Hydroxylation; Collagen; Cell adhesion.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COLLAGEN ISOFORMS, ALPHA 1(IV) FORM A TRIPLE HELIX STRUCTURE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      to a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      novel chain of basement
CRC64;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     IV COLLAGENS
BRANES OF KIDS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                BONDING. 12 OF
ALL KNOWN TYPE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   REPEATING
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (WHICH N
                                                                                                                                                                                                                                                                                                                                                                                                                                      collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 WHICH
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Ö
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MAY
```

Query Match Best Local Similarity

56.2%; 53.5%;

Score Pred.

219; DB 1; No. 6.6e-19;

Length 453;

```
RESULT 15
CA44_RABIT
   Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
Glycoprotein;
NON_TER
DOMAIN < DOMAIN 39
DISULFID 41
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Kamagata Y., Mattei M.-G., Ninomiya Y.;

"Isolation and sequencing of cDNAs and genomic DNAs encoding the
alpha 4 chain of basement membrane collagen type IV and assignmen
the gene to the distal long arm of human chromosome 2.";
J. Biol. Chem. 267:23753-23758(1992).
-!- FUNCTION: TYPE IV COLLAGEN IS THE MAJOR STRUCTURAL COMPONENT
GLOMERULAR BASEMENT MEMBRANES (GBM), FORMING A 'CHICKEN-WIRE'
MESHWORK TOGETHER WITH LAMININS, PROTEOGLYCANS AND ENTACTIN/
                                                                                                                                                                                                 the European Bioinformatics Institute. There are no restrictions on its use by non-profit institutions as long as its content is in no way modified and this statement is not removed. Usage by and for commercial entitles requires a license agreement (See http://www.isb-sib.ch/announce/or send an email to license@isb-sib.ch).
                                                                                                                                     InterPro;
InterPro;
                                                                                                                                                                                                                                                                                                       This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Oryctolagus cuniculus (Rabbit).
Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
Mammalia; Eutheria; Lagomorpha; Leporidae; Oryctolagus.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 01-NOV-1997 (Rel. 35, Created)
01-NOV-1997 (Rel. 35, Last sequence update)
30-NAY-2000 (Rel. 39, Last annotation update)
COLLAGEN ALPHA 4(IV) CHAIN (FRAGMENT).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       P55787;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CA44_RABIT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          TISSUE=Corneal endothelium;
MEDLINE=93054733; PubMed=1429714;
                                                                                    Extracel
                                                                                                                                                                   EMBL; L01477;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NCBI_TaxID=9986;
                                                                                                     Ptam;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             263
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             321 EIRPYISRCAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          μ.
                                                                                                                                                                                                                                                                                                                                                                                                         PTM:
                                                                                                                                                                                                                                                                                                                                                                                                                       SUBCELLULAR LOCATION: CELL SURFACE (POTENTIAL).

DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE

DOMAIN: ALPHA CHAINS OF TYPE IV COLLAGEN HAVE

DOMAIN (RC1) AT THEIR C-TERNINUS, FREQUENT INTERRUPTIONS OF THE

G-X-Y REPEATS IN THE LONG CENTRAL TRIPLE-HELICAL DOMAIN (WHICH PAUSE FLEXIBILITY IN THE TRIPLE HELIX), AND A SHORT N-TERMINAL

TRIPLE-HELICAL 7S DOMAIN.

TRIPLE-HELICAL 7S DOMAIN.

ONLY PROLUMES AT THE THIRD POSITION OF THE TRIPEPTIDE REPEATING

UNIT (G-X-Y) ARE HYDROXYLATED IN SOME OR ALL OF THE CHAINS.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SUBUNIT: THERE ARE SIX TYPE IV COLLAGEN ISOFORMS, ALPHA ALPHA 6(IV), EACH OF WHICH CAN FORM A TRIPLE HELIX STRUCTURE OTHER CHAINS TO GENERATE TYPE IV COLLAGEN NETWORK
                                                                                                                                                                                                                                                                                                                                      SIMILARITY: TO OTHER TYPE IV COLLAGENS
                                                                                                                                                                                                                                                                                                                                                                  UNIT (G-X-Y) ARE HYDROXYLAYED IN SOME CONSTRINE RESIDUES WHICH PTM: TYPE IV COLLAGENS CONTAIN NUMEROUS CYSTEINE RESIDUES WHICH ARE INVOLUED IN INTER- AND INTRAMOLECULAR DISULFIDE BONDING. 12 OF ARE INVOLUED IN ALL KNOWN TYPE
                                                                                                                                                                                                                                                                                                                                                         IV COLLAGENS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ERAHNQDLGLAGSCLPIFSTLPFAYCNIHQVCHYARRNDRSYWLASTA--PLPMTPLSED
                                                                                                                                                                                                                                                                                                   SWISS-PROT entry is copyright. It is produced through
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60
                                                                               PF01391; Collagen; 5.
                                                                                                                  PF01413; C4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             38;
                                                                                                                                                                                                                                                                                       the Swiss Institute of
                                                                                                                                                   177; -; NOT_ANNOTATED_CDS
IPR000087; -.
                                                                                                                                     IPR001442;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
 <1
393
413
                                                                    Basement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STANDARD;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           71
   392
623
502
                                                                  membrane;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             14;
                                   TRIPLE-HELICAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       PRT;
                                                                e tissue; Re
; Collagen;
                                                                                                                                                                                                                                                                                     Bioinformatics
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       623
                                                                Repeat; Hydroxyln; Cell adhesion
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             17;
                                                                                                                                                                                                                                                                                     and
                                                                                  Hydroxylation;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Indels
                                                                                                                                                                                                                                                                                     the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ALPHA 1(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                STRUCTURE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                assignment
                                                                                                                                                                                                                                                                                         EMBL
                                                                                                                                                                                                                                                                                                   a collaboration
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2;
                                                                                                                                                                                                                                                                                         outstation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             MAY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  of.
```

```
FT DISULFID 446 499 OR 502 (BY SIMILARITY).

FT DISULFID 458 464 OR 616 (BY SIMILARITY).

FT DISULFID 521 619 OR 616 (BY SIMILARITY).

FT DISULFID 555 616 OR 619 (BY SIMILARITY).

FT DISULFID 557 574 BY SIMILARITY).

FT DISULFID 567 574 BY SIMILARITY.

SQ SEQUENCE 623 AA; 62393 MW; CCBC9BB31242FE82 CRC64;

Query Match 54.9%; Score 214; DB 1; Length 623;

Best Local Similarity 50.7%; Pred. No. 3.7e-18;

Matches 36; Conservative 15; Mismatches 18; Indels 2; Gaps 1;

Matches 36; Conservative 15; Mismatches 18; Indels 2; Gaps 1;

Db 433 EXAHNODLGTLGSCLORFTIMPFLECNVNDVCNFASRNDYSYMLSTPALMPMNMAPITGR 60

QY 1 QRAHGQDLGTLGSCLORFTIMPFLECNVNDVCNFASRNDYSYMLSTPALMPMNMAPITGR 60

QY 1 QRAHGQDLGTLGSCLORFTIMPFLECNVNDVCNFASRNDYSYMLASAG--PLPMMPLSEE 490

QY 61 ALEPYISRCTV 71

Db 491 EIRPYISRCAV 501

Search completed: April 13, 2001, 15:46:08

Job time: 281 sec
```

```
GenCore version 4.5 Copyright (c) 1993 - 2000 Compugen Ltd.
```

OM protein - protein search, using sw model

Run April 13, 2001, 15:42:38 ; Search time 33.96 Seconds

(without alignments 43.679 Million cel cell updates/sec

Title: Perfect score: US-09-543-371-10_COP 390 _54_124

QRAHGQDLGTLGSCLQRFTT .MNMAPITGRALEPYISRCTV 71

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

198801 seqs, 68722935 residues

Searched:

number of hits satisfying chosen parameters: 198801

Minimum DB Maximum DB seq length: length: 2000000000

Post-processing: Minimum Match 0% Maximum Match 100% Listing first 45 summaries

PIR_67:*

Database

pir1:*
pir2:*
pir3:*
pir4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

22	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6		4	ω	2	1	No.	Result	
9		N	214	219	222	231	233	235	242	244	252	253	254	256	257	257	294	306	311	314	314	315	319	321	371	371	382	. 390	Score		
25.1	7.	4	٠.	56.2	σ.	9	9.	0	2.	62.6	4.	٠.	5	5	5	5			•		80.5	•		٠		95.1	97.9	100.0	Match	Query	æ
79	1775	312	623	453	1690	775	1761	1691	1712	1707	1744	261	1747	1763	1759	1758	1752	258	161	1691	754	1669	253	1669	471	246	220	1670	Length		
2	2	N	N	ν	1	Ν	ν	_	_	N	N	N	ν	ν	2	N	2	N	N	_	2	\vdash	N	_	2	N	2	_	DB.		
C43928	A31893	I48303	A45137	S18804	CGHU1B	A61228	T13990	ССНИ6В	ссни2в	A33526	S40991	A34476	A54121	S16366	T29351	T29350	A45407	в61228	S49488	S22917	A55267	CGMS4B	I48304	CGHU4B	902	I48302	B49736	3	ID		
	collagen alpha 1(I		lagen		alpha	alpha 2(type I	collagen alpha 6(I	alpha	alpha	alpha	alpha	alpha-	collagen alpha 2(I	alpha 2	ical prot	collagen alpha 3(I	lagen alpha	alpha	alpha	collagen alpha 5(I	alpha		alpha 1(alpha 3(lagen alpha 3(collagen alpha 3(I	Description		

44	4 2	40 41	39	38	37	36	ა 5	34	S S	32	31	30
57.5 57.5	58 57.5	58 8	58	59	59	59.5	60	60.5	61.5	62.5	62.5	78.5
14.7 14.7	14.9 14.7	14.9 14.9	14.9	15.1	15.1	15.3	15.4	15.5	15.8	16.0	16.0	20.1
599	1729 484	428 1445	397	1777	555	613	1495	736	470	622	252	58
N N	N N	2 2	N	Ν	N	N	N	N	N	2	N	2
B42049 A44951	T43403 H64105	C70670 T10728	S54018	T00490	T23531	S55615	S60255	T03849	S17447	S62580	JC2399	B43928
leishmanolysin (EC leishmanolysin (EC	1,3-beta-glucan sy pantothenate trans	probable glycosyl- probable gag/pol p	DBF2 protein-inter	nonstructural prot	hypothetical prote	thymidine kinase (transcription co-r	Fas-binding protei	probable ligand-bi	probable multicopp	PMS4 homolog misma	probable collagen

ALIGNMENTS

collagen alpha 3(IV) chain precursor, long splice form - human N; Alternate names: Goodpasture antigen; procollagen alpha 3(IV) chain long splice for

C; Species: Homo sapiens (man) C; Date: 28-Oct-1994 #sequence

C;Date: 28-Oct-1994 #sequence_revision 03-Oct-1995 #text_change 22-Jun-1999 C;Accession: A54763; A43928; A44043; A45971; A39786

-beThonen, A.; Mochizuki, T.; Tryggvason, K.; Reeders, S.T. 269, 23013-23017, 1994

A; Reference number: I. Biol. Chem. 269. Accession: A54763 A54763; MUID:94364994 of the human alpha3(IV) collagen chain. Coexpress

A; Molecule type: mRNA A; Residues: 1-1670 <MAR>

Cross-references: GB:X80031; NID:g577563; PID:g577564 Experimental source: kidney

R.; Fox, M.; Povey, S.; Rees, A.; Pusey, the

A; Accession: A43928 A;Title: Molecular cloning of the human Goodpasture antigen demonstrates it to be A;Reference number: A43928; MUID:92147878

A;Molecule type: mRNA A;Residues: 1331-1524,'I',1526-1670 <TUR> A;Cross-references: GB:M81379

A;Experimental source: kidney
R;Quinones, S.; Bernal, D.; Garcia-Sogo, M.; Elena, S.F.; Saus, J.
J. Biol. Chem. 267, 19780-19784, 1992
A;Title: Exon/intron structure of the human alpha 3(IV) gene encompassing the Goodpas

ction.

A;Reference number: A44043; MUID:93015826 A;Accession: A44043

A;MoLecule type: DNA; mRNA
A;MoLecule type: DNA; mRNA
A;Residues: 1386-1670 <QUI>
A;Cross-references: GB:M92993; NID:g177895; PIDN:AAA21610.1; PID:g177896
A;Cross-references: GB:M92993; NID:g177895; PIDN:AAA21610.1; PID:g177896
A;Note: sequence extracted from NCBI backbone (NCBIP:115597)
A;Reference number: A44738; MUID:94274734

A;Contents: annotation; erratum; correction to intronic sequence in A44043 R;Bernal, D.; Quinones, S.; Saus, J. J. Biol. Chem. 268, 12090-12094, 1993

A;Title: The human mRNA encoding the Goodpasture antigen is alternatively spliced A;Reference number: A45971; MUID:93280184

A; Status: nucleic acid sequence not shown A; Accession: A45971

A; Molecule type: mRNA A; Residues: 1427-1444 <BER>

A; Note: sequence extracted from NCBI backbone (NCBIP:133363); sequence incorrectly in R; Morrison, K.E.; Mariyama, M.; Yang-Feng, T.L.; Reeders, S.T. Am. J. Hum. Genet. 49, 545-554, 1991
A; Title: Sequence and localization of a partial cDNA encoding the human alpha3 chain A; Reference number: A39786; MUID:91353570 sequence incorrectly id

```
N;Contains: collagen alpha 3(IV) chain, splice form GP-V
C;Species: Homo sapiens (man)
C;Date: 03-May-1994 #sequence_revision 12-Nov-1999 #text_change 17-Mar-2000
C;Accession: B49736; B49736; S6911
R;Feng, L.; xia, Y.; Wilson, C.B.
J. Blol. Chem. 269, 2342-2348, 1994
A;Title: Alternative splicing of the NC1 domain of the human alpha3(IV) col A;Reference number: A49736; MUID:94124597
A;Accession: B49736
A;Accession: D49736
A;Status: nucleic acid sequence not shown; t
A;Molecyle type: mRNA
A;Residues: 22-220 <FEN2>
A;Cross-references: GB:U02519; NID:g409106;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            F:43-1438/Region: interrupted helical
F:791-793/Region: cell attachment (R-G-D) motif
F:791-793/Region: cell attachment (R-G-D) motif
F:996-998/Region: cell attachment (R-G-D) motif
F:1154-1156/Region: cell attachment (R-G-D) motif
F:1306-1308/Region: cell attachment (R-G-D) motif
F:1345-1347/Region: cell attachment (R-G-D) motif
F:1432-1434/Region: cell attachment (R-G-D) motif
F:1431-1551/Domain: carboxyl-terminal repeat <CT1>
F:1451-1551/Domain: collagen IV carboxyl-terminal repeat <CT2>
F:1561-1665/Domain: collagen IV carboxyl-terminal repeat <CT2>
F:31,33,39,41,125,422,476,479,682,722,809,1387/Disulfide bonds: interchain #status F:253/Binding site: carbohydrate (Asn) (covalent) #status predicted
F:1460-1548,1493-1551/Disulfide bonds: (or 1460-1551, 1493-1548) #status predicted
F:1505-151,1616-1622/Disulfide bonds: #status predicted
F:1505-151,1616-1622/Disulfide bonds: #status predicted
F:1505-151/Bisulfide bonds: #status predicted
                                                                                                                                                                                                             A;Status: nucleic acid sequence A;Molecule type: mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        collagen alpha 3(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Дb
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Introns: 1385/1; 1418/1; 1488/1; 1547/2; 1585/3; 1643/2 #status incomplete A;Note: the alpha 3(IV) and alpha 4(IV) chain genes are encoded on opposite strands with C;Complex: This minor type IV collagen is thought to form a heterotrimer of two alpha 3(mong trimer amino-terminal domains (with disulfide and desmosine cross-links), dimeric a er associations in the interrupted helical domain (with disulfide and desmosine cross-links).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A:Description: minor structural component of extracellular C:Superfamily: collagen alpha 1(IV) chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Accession: A39786
A;Molecule type: mRNA
A;Molecule type: mRNA
A;Residues: 1453-1593, 'A',1595-1670 <MOR>
A;Cross-references: GB:S55790; NID:g234418; PIDN:AAB19637.1;
C;Comment: Prolines and lysines at the third position of the ed and subsequently O-glycosylated.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A:Cross-references: GDB:128351; OMIM:120070
A:Map position: 2936-2937
A:Introns: 1385/1; 1418/1; 1488/1; 1547/2;
                                                                                                                                                                     Molecule type: mRNA
Residues: 169-220 <FEN1>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Query Match
Best Local S
Matches 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   C; Comment: In Goodpasture's
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Words: alternative splicing; basement membrane; cell binding; coiled coil; extracel 8/Domain: signal sequence *status predicted <SIG>-1670/Product: collagen alpha 3(IV) chain, long splice form *status predicted <MAT>-42/Domain: amino-terminal nonhelical, NH1 <NH1>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61 ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    QRAHGODLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 1539
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  QRAHGQDLGTLGSCLQRETTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          pha 3(IV) chain, medium splice form -
collagen alpha 3(IV) chain, splice form
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            100.0%; ilarity 100.0%; Conservative (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         syndrome, an autoimmune response
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 390; DB 1;
Pred. No. 3.1e-38;
); Mismatches 0;
                                                                                                translation
PIDN:AAA18942.1; PID:g409107
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      human (fragment)
orm GP-V
                                                                                                                                                                                                                                                                                                      the human alpha3(IV) collagen
                                                                                                not
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Length 1670;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    basement membrane in kidney
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   develops against an
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PID:g234419
tripeptide repeating unit
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   epitope
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 pred
                                                                                                                                                                                                                                                                        В
                                                                                                                                                                                                                                                                                                                             Qy
                                                                                                                                                                                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Q
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Ъ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Qγ
```

```
collagen alpha 3(IV) chain - bovine (fragment)
C;Species: Bos primigenius taurus (cattle)
C;attle: 04-Dec-1992 #sequence_revision 04-Dec-1992 #text_change 13-Aug-1999
C;Accession: A39024; S20672; S17802; A35167; C39419; S13747; S20815
R;Morrison, K.E.; Germino, G.G.; Reeders, S.T.
                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
Hest Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   collagen alpha 3(IV) chain - mouse (fragment) C.Species: Mus musculus (house mouse) C.Date: 15-Mar-1996 #sequence_revision 15-Mar-1996 C.Accession: 148302; $47278 R.Miner, J.H.; Sanes, J.R.
J. Cell Biol. 127, 879-891, 1994
A.Title: Collagen IV alpha 3, alpha 4, and alpha 5, R.Reference number: A54979; MUID:95050957
A.Reference number: A54979; MUID:95050957
                                                                                                                                                 A39024
                                                                                                                                                                      RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A:Cross-references: EMBL:Z35166; NID:g535197; PID:g535198 C:Superfamily: collagen alpha 1(IV) chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Molecule type: mRNA
A; Residues: 1-246 < RES>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Map position: 2q36-2q37

(Superfamily: collagen alpha 1(IV) chain

(Skyperfamily: collagen alpha 1(IV) chain

(Keywords: alternative splicing; basement membrane; cell bindin

F;1-220/Froduct: collagen alpha 3(IV) chain, medium splice form

F;1-45-169-220/Froduct: collagen alpha 3(IV) chain, splice from

F;22-220/Domain: carboxyl-terminal nonhelical, NC1 <NC1>

F;34-134/Domain: collagen IV carboxyl-terminal repeat <C71>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Gene: GDB:COL4A3
A;Cross_references: GDB:128351; OMIM:120070
A;Map position: 2q36-2q37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Molecule type: mRNA
A;Residues: 1-45,169-204,'L',206-220 <PEN>
C;Comment: For the complete sequence of th
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Note: this is the conceptual translation of the nucleic acid submitted to GenBank R;Penades, J.R.; Bernal, D.; Revert, F.; Johansson, C.; Fresquet, V.J.; Cervera, J.; Eur. J. Biochem. 229, 754-760, 1995.

A;Title: Characterization and expression of multiple alternatively spliced transcript utoantigen and one of its alternative forms.

A;Reference number: S69111; MUID:95278230
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         C; Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                116
                                                                                                                                                                                                                                                               61 ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                         56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                123
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    61 ALEPYISECTV 71
                                                                                                                                                                                                                                                                                                                                                                                         Н
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          63 QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGI 122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1 QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60
                                                                                                                                                                                                                                                                                                                     97.9%;
1 Similarity 98.6%;
70; Conservation
                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                    95.1%;
93.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    sequence of the long splice form, see
                                                                                                                                                                                                                                                                                                                                                                                                                        Score 371; DB 2; Pred. No. 8.1e-37; Wiematches 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 382; DB 2;
Pred. No. 3.5e-38;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 chains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          #text_change 16-Feb-1997
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  cell binding; coiled coil; extra
splice form (fragment) *status pr
splice from GP-V (fragment) *stat
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Length 220;
                                                                                                                                                                                                                                                                                                                                                                                                                           Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 'n
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            rodent basal laminae:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                      0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      õ
```

Use of the

to clone

and

Ø

```
A; Molecule type: protein
A; Residues: 236-255 <GU2>
C; Superfamily: collaror ?
                                                                                  N;Alternate names: procollagen alpha 1(IV) chain (:Species: Homo sapiens (man) (:Species: Homo sapiens (man) (:Species: Homo sapiens (man) (:Accession: $16876; A32117; $02738; $00048; $25826; A23115; $00207; $39614; R;Soininen, R.; Huotari, M.; Ganguly, A.; Prockop, D.J.; Tryggvason, K. J. Biol. Chem. 264, 13565-13571, 1989 A;Title: Structural organization of the gene for the alpha-1 chain of human 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              C;Superfamily: collagen alpha 1(IV) chain
C;Keywords: basement membrane; cell binding; colled coil; disulfide bond; dt
F;1-238/Domain: collagenous (fragment) #status predicted <COL>
F;239-471/Domain: carboxyl-terminal nonhelical, NC1 *status predicted <NC1>
F;239-471/Domain: repeat NC1 *status predicted <NC1>
F;239-353/Domain: repeat NC1 *status predicted <NC1>
F;354-471/Domain: repeat NC1 *status predicted <NC1>
F;352-238/Modified site: hydroxyproline (Pro) *status experimental
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                J. Biol. Chem. 266, 15318-15324, 1991
A;Title: Glomerular basement membrane.
A;Reference number: A39419; MUID:91332
A;Accession: C39410
                                                                                                                                                                                                                        RESULT 5
CGHU4B
Collagen alpha 1(IV) chain precursor -
collagen alpha 1(IV) chain precursor -
                                                                                                                                                                                                                                                                                                                                                                             Š
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Residues: 227-228,'X',230-244 <BUT>
R;Saus, J.; Wieslander, J.; Langeveld, J.P.M.; Quir
K;Saus, J.; Wieslander, J.; Langeveld, J.P.M.; Quir
J. Biol. Chem. 263, 13374-13380, 1988
A;Title: Identification of the Goodpasture antigen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Cross-references: EMBL:M63139; NID:g162886; PID R;Butkowski, R.J.; Langeveld, J.P.M.; Wieslander, J. Biol. Chem. 262, 7874-7877, 1987
                                     A; Status: nucleic
                                                       A; Accession: S16876
                                                                        A; Reference number:
                                                                                                                                                                                                                                                                                                                                          B
                                                                                                                                                                                                                                                                                                                                                                                                                    В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Molecule type: protein
A; Residues: 236-258 <GUN>
R; Gunwar, S.; Ballester, F.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A.Molecule type: protein pidues: 227-228, /x',230-252, /y',254 <SAU> A.War, S.; Saus, J.; Noelken, M.E.; Hudson, B.G. J. Blol. Chem. 265, 5466-5469, 1990 A;Title: Glomerular basement membrane. Identification A;Reference number: A35167; MUID:90202779 A;Accession: A35167
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Reference number: S17802; MUID: 88330844 A; Accession: S17802
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Molecule type: protein
A; Residues: 227-228, 'X', 230-244 <BUT>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Reference number: S18432; MUID:87222419
A;Accession: S20672
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Title: Localization of the Goodpasture epitope
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A; Residues:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Accession: A39024
A; Molecule type: mRNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Title: Use of the A; Reference number:
                  A; Molecule
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
                                                                                                                                                                                                                                                                                                                                          341
                                                                                                                                                                                                                                                                                                                                                                                                                       281
                                                                                                                                                                                                                                                                                                                                                                           61 ALEPYISRCTV 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                  417-423/Disulfide bonds:
type: Di
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         1-471 <MOR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                     acid sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 polymerase chain reaction A39024; MUID:91093146
                                                                              S16876;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 95.1%;
91.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MUID: 91332055
                                                                            ation of the gene
MUID:89340433
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         membrane.
                                     not shown;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 6,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score
Pred.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  #status
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             R.; Timoneda,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Identification
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    371;
No. 1.
                                     translation not shown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               DB 2;
1.6e-36;
nes 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PIDN: AAA62708.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Quinones,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ő
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  J.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      as
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             J.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Ø
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 471
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            novel chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Hamilton,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Chonko,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         s.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                а
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         dimeric
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      alpha-3(IV) chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                fourth
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Hudson,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PID:g162887
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A.M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       subunits
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              chain, alpha4,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              basement membrane
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Edwards,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   cDNA encoding
                                                                                                                                                                                                                                                                                                                                                                                                                       340
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  duplication;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  B
                                                                                            type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         the
                                                                                                                                                        A02863;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  .
ი
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           S.J.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         noncol
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                of.
                                                                                                 ٧I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              type
                                                                                               60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             No
                                                                                                                                                          A
5
```

R:Glanville, R.W.; Rauter, A.
Hoppe-Seyler's Z. Physiol. Chem. 362, 943-951
A;Title: Pepsin fragments of human placental
A;Reference number: S16908; MUID:82005835
A;Accession: A58517

943-951, 1981 acental basement-membrane

collagens

showing

A;Molecule type: protein
A;Residues: 534-718,'D',720-836,'Y',838-841,'P',843-903,
A;Experimental source: placenta

ó

,905-913,'K',915-997,'K'

,

(type

IV) collagen.

Complete

amino-acid

A;Molecule type: protein
A;Residues: 534-537, 'G',539,'G',541-542,'X',544-553;1389-1405,
R;MacWright, R.S.; Benson, V.A.; Lovello, K.T.; van der Rest,
Biochemistry 22, 4940-4948, 1983

A; Title: Isolation and characterization

MUID:84053346

pepsin-solubilized

human basement

3 'xx'

Fietzek,

,1408-1409,'X',1411

```
the
A; Access....

A; Molecule type: procear, Molecule type: 971-554 <EBL>
A; Residues: 371-554 <EBL>
R; Babel, W; Glanville, R.W.

R; Babel, W; Glanville, R.W.

Eur. J. Biochem. 143, 545-556, 1984

Eur. J. Biochem. 143, 545-556, 1984

A: Title: Structure of human-basement-membrane (type: 1985)

A: Title: number: A02863; MUID: 85003629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Residues: 1-6, 'L',8-28 <POE>
A; Cross-references: EMBL:X12784; NID:g30072
A; Cross-references: EMBL:X12784; NID:g30072
R; Brazel, D; Oberbaeumer, I; Dieringer, H; Bab
Eur. J. Biochem. 168, 529-336, 1987
A; Title: Completion of the amino acid sequence of
A; Reference number: S00048; MUID:88029471
A; Accession: S00048
A; Molecule type: mRNA
A; Residues: 1-318,'A', 320-944 <BRA1>
                                                                                                                                                                                                                                             A:Molecule type: mRNA
A;Residues: 244-530 <SOI3>
A;Cross-references: EMBL:Y00706; NID:g29548;
A;Choss-references: EMBL:Y00706; NID:g29548;
Colbik, R.; Mann, K.; Kuehn, K.
EMBO J. 12, 4795-4802, 1993
A;Title: The alpha-1-beta-1 integrin recognit
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Title: Amino acid sequence of the N-terminal A;Reference number: A23115; MUID:86004708 A;Accession: A23115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Molecule type: protein
A; Residues: 271-318, 'A', '320-554 <BRA2>
R; Glanville, R.W.; Qian, R.Q.; Siebold,
Eur. J. Biochem. 152, 213-219, 1985
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Accession: S02738
A;Status: translation not shown
A;Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          R;Poeschl, E.; Pollner, R.; Kuehn, K. EMBO J. 7, 2687-2695, 1988
A;Title: The genes for the alphal(IV) and A;Reference number: S02738; MUID:89030632
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Title: The structural A;Reference number: A92 A;Accession: A32117
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Cross-references: EMBL:J04217; GB:J05039; NID:g180800; PIDN:AAA53098.1; PID:g180803 A;NOte: the nucleotide sequence was submitted to the EMBL Data Library, October 1988 R;Soininen, R.; Huotari, M.; Hostikka, S.L.; Prockop, D.J.; Tryggvason, K. J. Biol. Chem. 263, 17217-17220, 1988
                                                                                                                                                                                                   A; Reference number: A; Accession: S39614
                                                                                                                                                                                                                                                                                                                                                                                         A; Reference number: A; Accession: S00207
                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Title: Complete primary structure of the alpha(1)-chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                               R; Soininen, R.;
FEBS Lett. 225,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Experimental source: placenta A; Note: the amino end of the mature
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Molecule type: protein
A; Residues: 28-236, 'KE', 239-240, 'K', 242-243
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Cross-references: EMBL:J04217; NID:g180759; R;Poeschl, E.; Pollner, R.; Kuehn, K.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Molecule type: DNA
A; Residues: 1-28 <SOI2>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Accession: S25826
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Cross-references:
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Haka-Risku, T
188-194, 1987
                                                                                                                                                                                                                           S39614;
                                                                                                                                                                                                                                                                                                                                                                                                                  S00207; MUID:88083584
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EMBL: x05561; NID: g30066;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A92690;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    genes for alphal and 590; MUID:89034231
                                                                                                                                                                                                                         integrin recognition MUID:94038963
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     T.; Prockop,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             form
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     D.J.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   alpha2(IV) chains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Risteli,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            <GLA>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PIDN:CAA29075.1; PID:g30067
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          alpha2
                                                                                                                                                                                                                                                                                                                       PIDN:CAA68698
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Babel, W.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PIDN: AAA53097.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Tryggvason,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     aggregation
                                                                                                                                                                                                                                                    site
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            chains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    J.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      alphal chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Glanville,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Kuehn,
                                                                                                                                                                                                                                                    the
                                                                                                                                                                                                                                                                                                                                                                                                                                        of.
                                                                                                                                                                                                                                                                                                                       <u>.</u>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        o
f
                                                                                                                                                                                                                                                                                                                                                                                                                                           human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            human
                                                                                                                                                                                                                                                                                                                       PID: g29549
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     cross-linking
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PID: 9553233
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ~
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      of
                                                                                                                                                                                                                                                                                                                                                                                                                                        basement membrane
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     R.₩.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      basement membran
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      human basement
                                                                                                                                                                                                                                                    membrane
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ٧I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Deutzmann,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     region
```

```
A; Description: Structural component of extracellular basement membrane
A; Description: Structural component of extracellular basement membrane
C; Superfamily: collagen alpha 1(IV) chain
C; Superfamily: collagen alpha 1(IV) chain
C; Keywords: basement membrane; blocked amino end; cell binding; coiled coil; duplication
C; Keywords: basement membrane; blocked amino end; cell binding; coiled coil; duplication
E; 1-26/Domain: signal sequence #status predicted <MAT>
F; 1-169/Domain: signal sequence #status predicted <MAT>
F; 1-169/Domain: interrupted helical COIL
F; 1-17-199/Region: cell attachment (R-G-D) motif
F; 917-919/Region: cell attachment (R-G-D) motif
F; 917-919/Region: cell attachment (R-G-D) motif
F; 917-919/Region: cell attachment (R-G-D) motif
F; 916-1053/Domain: collagen IV carboxyl-terminal repeat <CTI>F; 1451-1551/Domain: collagen IV carboxyl-terminal repeat <CTI>F; 1451-1659/Domain: collagen IV carboxyl-terminal repeat <CTI>F; 1751-1659/Domain: collagen IV carboxyl-terminal repeat <CTI
F; 1751-1659/Domain: coll
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Cross-references: EMBL:M10940; NID:g180421; PIDN:AAA52006 R;Brinker, J.M.; Gudas, L.J.; Loidl, H.R.; Wang, S.Y.; Rose Proc. Natl. Acad. Sci. U.S.A. 82, 3649-3653, 1985 A;Title: Restricted homology between human alpha-1 type IV A;Reference number: $16879; MUID:85216555 A;Accession: $16879
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 pss-references: EMBL:M1315; NID:g180817; PIDN:AAA52042.1; PID:g180818 prbaeumer, I.; Laurent, M.; Schwarz, U.; Sakurai, Y.; Yamada, Y.; Yogeli, Bur J. Blochem. 147, 217-224, 1985 a;Title: Amino acid sequence of the non-collagenous globular domain (NC1) of A; Reference number: A02864; MUID:85127033 a; A; Accession: S18091
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A;Accession: S16910
A;Molecule type: protein
A;Mesidues: 534-537,'G',539,'G',541-542,'G',544-549;939-940,'M',942-944,'V',946,'X',948
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Molecule type: mRNA
A; Residues: 1256-1669 < PIH>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Cross-references: GDB:119791; OMIM:120130
A;Map position: 13q34 13q34
A;Introns: 28/3; 48/3; 78/3; 93/3; 108/3; 129/3; 147/3; 156/3; 184/3; 205/3; 217/3; 231,
A;Introns: 28/3; 48/3; 78/3; 93/3; 108/3; 129/1; 1020/1; 1066/3; 1109/1; 1136/1; 111/1; 731/3; 782/1; 820/1; 876/1; 996/1; 957/1; 990/1; 1020/1; 1066/3; 1109/1; 1136/1; 111/2; 731/3; 782/1; 820/1; 876/1; 966/1; 957/1; 990/1; 1020/1; 1066/3; 1109/1; 1136/1; 111/2; 1100/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/1; 1000/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Title: The arrangement of intra- and intermolecular disulfide bonds in the carboxytern A;Reference number: S02550; MUID:89005112
A;Contents: annotation; disulfide bonds
C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Molecule type: protein
A;Residues: 1435-1461,'H',1463-1482,'X',1484-1491;1501-1514,'X',1516-1519;1534-1553,'X'
R;Siebold, B.; Deutzmann, R.; Kuehn, K.
Eur. J. Bjochem. 176, 617-624, 1988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Molecule type: mRNA
A; Residues: 1259-1669 <BRI>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Gene: GDB:COL4A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ; PIDN:AAA52042.1; PID:g180818
Sakurai, Y.; Yamada, Y.; Vogeli,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PIDN:AAA52006.1; PID:g180424 ng, S.Y.; Rosenbloom, J.; Kefalides,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    other procollagen chains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        R.; Cheung, M.C.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            IV procollagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                G.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Voss,
       A; Molecule type: mRNA
A; Residues; 1-1669 <MUT>
A; Cross-references: EMBL: J04694; NID: 9556296; PID: A; Cross-references: EMBL: J04694; NID: 9556296; PID: A; Cross-reference : EMBL: J04694; NID: 9556296; PID: A; PRODE CONTROL IN 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     collagen alpha 1(IV) chain precursor - mouse C;Species: Mus musculus (house mouse) 31-Dec-1992 #text_change 16-Jun-2000 c;Date: 28-May-1986 #sequence_revision 31-Dec-1992 #text_change 16-Jun-2000 C;Accession: A33525; S01454, A28066; A02864; A25636; A29301; S19079; A32003; R;Muthukumaran, G: Blumberg, B.; Kurkinen, M. J. Biol. Chem. 264, 6310-6317, 1989 A;Title: The complete primary structure for the alpha-1-chain of mouse collag A;Reference number: A33525; MUID:89197932 A;Accession: A33525; MUID:89197932
```

PIDN:AAA50292.1;

PID:g556297

alpha-1-chain of mouse collagen

A31766

and

derived

amino

acid sequence

of

```
F;1120,1268/Modified site: 5-hydroxylysine (Lys) (partial) #status experimental F;1120,1268/Binding site: carbohydrate (Lys) (covalent) (partial) #status experimental F;1214,1424/Modified site: 3-hydroxyproline (Pro) #status absent F;1392,1395,1398,1404/Modified site: 4-hydroxyproline (Pro) #status experimental F;1460-1548,1493-1551/Disulfide bonds: (or 1460-1551, 1493-1548) #status predicts F;1505-1511,1616-1622/Disulfide bonds: #status predicted F;1505-1662,1604-1665/Disulfide bonds: (or 1570-1665, 1604-1662) #status predicts
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          δÃ
                                                                                                                                                                                                                                                                                                                                                                                              C;Species: Mus musculus (house mouse)
C;Date: 15-Mar-1996 #sequence_revision
C;Accession: 148304; S47280
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RESULT
148304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              밁
                                                                                                                                                                                                                                                                                                                            R;Miner, J.H.; Sanes, J.R.
J. Cell Biol. 127, 879-891, 1994
A;Title: Collagen IV alpha 3, alpha 4, and alpha
A;Reference number: A54979; MUID:95050957
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                       A;Cross-references: EMBL:Z35168; NID:g535201; PIDN:CAA84531.1; PID:g535202 C;Superfamily: collagen alpha 1(IV) chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                      collagen alpha 5(IV) chain - mouse (fragment)
Db
                               Qy
                                                                  Db
                                                                                               δÃ
                                                                                                                                                                                                                                                            A; Molecule type: mRNA
A; Residues: 1-253 < RES>
                                                                                                                                                                                                                                                                                           A; Status: preliminary
                                                                                                                                                                                                                                                                                                             A; Accession: I48304
                                                                                                                                    Query Match
Best Local
Matches 5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local :
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           1540 NIRPFISRCAV 1550
124 SIQPFISRCAV 134
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           61
                                                                61 ALEPYISRCTV 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 55;
                                                                                                                                        53
'
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                        Similarity 74.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   82.3%;
                                                                                                                                                        81.8%;
                                                                                                                                           12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    9.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Score 321; DB 1;
Pred. No. 5.2e-30;
9; Mismatches 7;
                                                                                                                                        Score 319; DB 2;
pred. No. 1.3e-30;
2; Mismatches 6
                                                                                                                                                                                                                                                                                                                                                                                                                          15-Mar-1996
                                                                                                                                                                                                                                                                                                                                                        σ
                                                                                                                                                                                                                                                                                                                                                                                                                          #text_change 13-Aug-1999
                                                                                                                                                                                                                                                                                                                                                        chains
                                                                                                                                             6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 1669;
                                                                                                                                                                           Length 253;
                                                                                                                                                                                                                                                                                                                                                          in
                                                                                                                                                                                                                                                                                                                                                          rodent basal laminae:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                               0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   experimenta
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                 0,
```

```
J. Biol. Chem. 261, 665
A;Title: Alpha-1 type I
A;Reference number: S19
A;Accession: S19094
A;Molecule type: DNA
A;Molecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Keler.....
A; Accession: A293U1
A; Accession: A293U1
A; Molecule type: mRNA
A; Molecule type: mRNA
A; Residues: 1441-1669 < KUR>
A; Cross-references: EMBL: M15832; NID: g192282;
A; Cross-references: EMBL: M15822; NID: g192282;
A; Cross-references: EMBL: M15822; NID: g192282;
A; 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               R;Killen,
J. Biol. (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             J. Biol. Chem. 263, 8706-8709, 1988
A;Title: Structure of the amino-terminal
A;Reference number: A28066; MUID:88243724
                                                                                                                                                                                                                                                                                                                                         A;Cross-references: EMBL:M23333; NIL
A;Cross-references: EMBL:M23333; NIL
R;Sakurai, Y.; Sullivan, M.; Yamada,
R;Sakurai, Y.; Sullivan, M.; Yamada,
J. Biol. Chem. 261, 6654-6657, 1986
J. Biol. Chem. 261, 6654-6657, 1986
A;Title: Discontinuities
A;Reference number: S1690
A;Accession: S16909
A;Molecule type: protein
                                                                                                                    A; Molecule type: DNA
A; Residues: 1110-1135;1189-1316;1342-1383;1418-1487
A; Cross-references: EMBL:M13027
R; Schuppan, D.; Timpl, R.; Glanville, R.W.
FEBS Lett. 115, 297-300, 1980
                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Molecule type: DNA
A; Residues: 1-28 <BUR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  R;Burbelo, P.D.; Martin, G.R.; Yamada, Y.
Proc. Natl. Acad. Sci. U.S.A. 85, 9679-9682,
A;Title: Alpha1(IV) and alpha2(IV) collagen of
A;Reference number: A94220; MUID:89071759
A;Accession: A31766
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Reference number: A92702; MUID:89066738
A;Accession: A32003
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Molecule type: DNA
A; Residues: 1-28 < KIZ)-
A; Cross-references: EMBL: J03944; NID: 9
R; Kaytes, P.; Wood, L.; Theriault, N.;
J. Biol. Chem. 263, 19274-19277, 1988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     R;Killen, P.D.; Burbelo, P.D.; Martin, G.F
J. Biol. Chem. 263, 12310-12314, 1988
A;Title: Characterization of the promoter
A;Reference number: S19079; MUID:88315019
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Note: the authors translated the codon CA(R; Kurkinen, M.; Condon, M.R.; Blumberg, B.; J. Biol. Chem. 262, 8496-8499, 1987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Molecule type: mRNA
A;Residues: 1149-1396,'S',1398-1424 <NAT>
A;Cross-references: EMBL:M14042; NID:g192286;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Cross-references: EMBL:J03758; NID:g192669; R;Oberbacumer, I.; Laurent, M.; Schwarz, U.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Residues: 1-129 <KI1>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Accession: A28066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Residues: 1-185,'L',187-318,'S',320-368,'L',370-402,'F'
A;Cross-references: EMBL:X06777
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         J. Biol. Chem. 263, 19
A; Title: Head-to-head
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A; Reference number: A; Accession: S19079
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Title: Extensive homology A; Reference number: A94680;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Molecule type:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        R; Nath,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Accession: A02864
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Oberbaeumer, I.; Laurent, M.; Schwarz, U.; Sakural, Y.; Yamada, Y.; ur. J. Blochem. 147, 217-224, 1985;Title: Amino acid sequence of the non-collagenous globular domain;Reference number: A02864; MUID:85127033
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Cross-references: EMBL:X02201; NID:g50233; Nath, P.; Laurent, M.; Horn, E.; Sobel, M. Poe 43, 301-304, 1986
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Molecule type: mRNA
Residues: 1276-1669
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 tle: Isolation of an alpha-1 type-IV collagen cDNA clone using ference number: A25636; MUID:86301886
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               plecule type: DNA sidues: 1-28 <KAY> ross-references: EMBL:J04448; NID:g192666;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        P.D.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Burbelo,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        mRNA
                                                           s16909;
                                                                                                                                                                                                                                                                                                                                                                                                 EMBL:M23333; NID:g340878;
ivan, M.; Yamada, Y.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    EMBL: J03944; NID: g192673; PI
L.; Theriault, N.; Kurkinen,
                                                                                                                                                                                                                                                                                                         S19094;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 <0BE>
                                                                                                                                                                                                                                                                                                         collagen gene evolved
94; MUID:86196099
                                                           the triple helical MUID:80246483
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      between the carboxyl-terminal MUID:87250460
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Sakurai,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CAG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                portion
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Yamada,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          genes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Barlow,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ; PIDN:CAA26132.1; PID:g1333876 .E.; Zon, G.; Vogeli, G.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ; PIDN:AAA37342.1; PID:gi
for residue 1374 as Arg
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; PIDN:AAA37439.1; PI
Sakurai, Y.; Yamada,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Yamada,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    PIDN:AAA37442.1; PID:g466503
en, M.; Vogeli, G.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PIDN:AAA37340.1;
Yamada, Y.
                                                                                                                                                                                                                                                                                                                                                                                                                             PIDN: AAA51625.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PIDN: AAA37437.1;
                                                                                          sequence
                                                                                                                                                                                                                                                                                                                                      differently
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                οf
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ٧
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 are
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          alpha-1(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           D.P.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              regulated
                                                                                          Gly-X-Y
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                murine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ,404-480,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               peptides
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Quinones,
                                                                                                                                                                                                                                                                                                                                      from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            genes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PID:g192287
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PID:g192670
da, Y.; Voge
                                                                                                                                                                                                                                                                                                                                                                                                                             PID: 9535668
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PID: 9450449
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PID: 9387115
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             alpha-1(IV)
                                                                                          of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              γď
                                                                                                                                                                                                                                                                                                                                      fibrillar
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    'L',482-492,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              a bidirectional
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  of.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      a synthetic
                                                                                          basement membrane
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           S.; Saus,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     (NC1)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  mouse alpha-1(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Vogeli,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       gene.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Of.
                                                                                                                                                                                                                                                                                                                                  collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             G
::
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Ή,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   oligodeo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          sequen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  alpha-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ,494-7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Pihla
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Voss
                                                                                                                                                                                                                                                                                                                               gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              prom
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                cha
                                                                                       æ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Вþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Q
```

```
A; Introns: 28/3
A; Note: the lis
C; Superfamily:
C; Keywords: bas
F; 1-27/Domain:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Residues: 940-946,'G',948-949,'G',951-955,'G',957;1213-1228,'X',1230-1234,'P',1236-R;Schuppan, D.; Glanvillė, R.W.; Timpl, R.

Eur. J. Biochem. 123, 505-512, 1982
A;Title: Covalent structure of mouse type-IV collagen. Isolation, order and partial a A;Reference number: A25991; MUID:82186723
A;Accession: A25991
A;Molecule type: protein
A;Residues: 940-946,'X',948-949,'X',951-955,'X',957-964,'X',966-991,'X',993-1003,'X', A;Residues: 940-946,'X',948-949,'X',1082-1083,'X',1085-1106,'X',1108-1115,'DE',1118-11
                                                                                                                                                                                  collagen alpha 5(IV) chain dog (fragment)
c;Speciles: Canis lupus familiaris (dog)
C;Date: 06-Feb-1995 #sequence_revision 06-Fe
C;Accession: A55267
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      F;126/Binding site: carbohydrate (Asn) (covalent) #status predicted F;971,974,977,986,989,1001,1007,1019,1022,1031,1037,1040,1055,1060,1063,92,1298,1310,1313,1322,1337,1346,1349,1422,1425,1431,1437,1440/Modified F;1214,1424/Modified site: 4-hydroxyproline (Pro) #status experimental F;1304/Modified site: 5-hydroxylysine (Lys) #status experimental F;1505-1511,1616-1622/Disulfide bonds: #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                F:163-1440/Domain: collagenous, triple helix <COL>
F:597-599/Region: cell attachment (R-G-D) motif
F:781-783/Region: cell attachment (R-G-D) motif
F:917-919/Region: cell attachment (R-G-D) motif
F:968-970/Region: cell attachment (R-G-D) motif
F:968-970/Region: cell attachment (R-G-D) motif
F:1441-1669/Domain: carboxyl-terminal nonhelical,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Molecule type: protein
A;Molecule type: protein
A;Residues: 1173-1181', X', 1183-1184, 'X', 1186-1187, 'X', 1189-1205, 'Q', 1207, 'XE', 1210-12
A;Residues: 1173-1181, 'X', 1272, DM';1275, 'L', 1277-1282;1316-1318, 'X', 1320-1327, 'X', 1
3, 'Sp', 1266, 'IT', 1269, 'SK', 1272, DM';1275, 'L', 1277-1282;1316-1318, 'X', 1320-1327, 'X', 1
R;Weber, S.; Engel, J.; Wiedemann, H.; Glanville, R.W.; Timpl, R.
                                 A; Reference number: A; Accession: A55267
                                                                                                       R; Zheng, K.; Thorner, P.S.; Marrano, P.; Bauma Proc. Natl. Acad. Sci. U.S.A. 91, 3989-3993, 1 A; Title: Canine X chromosome-linked hereditary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             F;1441-1552/Region: duplication
F;1553-1669/Region: duplication
F;1553-1669/Region: duplication
F;31,36,39,41,434,467,470/Disulfide bonds: interchain #status
F;31,36,39,41,434,467,470/Disulfide bonds: interchain #status
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  F;28-1669/Product:
F;28-162/Domain: 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Residues:
C; Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Reference number:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Eur. J. Biochem. 139, 401-410, A; Title: Subunit structure and
A; Status: preliminary
                           A; Accession:
                                                                                                                                                                                                                                                                                                                          RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Molecule type:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Accession:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Accession: B25991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Ma
Best Loc
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ;Introns: 28/3; 48/3; 78/3; 93/3; 108/3; 129; Note: the list of introns may be incomplete; Superfamily: collagen alpha 1(IV) chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     28-162/Domain: 7S <7SD>
                                                                                   type IV.
                                                                                                                                                                                                                                                                                                                                                                                                           1540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1480
                                                                                                                                                                                                                                                                                                                                                                                                                                                             61 ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR
                                                                                                                                                                                                                                                                                                                                                                                                           NIRPFISRCAV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               :ype: protein
1435-1443 <W
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   basement membrane;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        S17801
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    signal sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     48/3; 78/3; of introns
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  nal sequence #status predicted <SIG>
collagen alpha l(IV) chain "-'
S <7SD>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S17801;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      <WEB>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     80.8%;
76.1%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               and assembly
                                                                                                                                  Marrano, P.; Baumal, R.; McInnes,
A. 91, 3989-3993, 1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    and assembly of the globular MUID:84132058
                                                       MUID: 94224868
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 315; DB 1; L
Pred. No. 2.7e-29;
"'Amatches 7;
                                                                                                                                                                                                                   06-Feb-1995
                                                                                                            nephritis:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NC1
                                                                                                                                                                                                                #text_change
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                coil; duplication;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         <NC1>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             domain of
                                                                                                         genetic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           predicted
                                                                                                                                                                                                                   13-Aug-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 <MAT>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             basement-membrane
                                                                                                               model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   extracellular
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             site:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1075,
                                                                                                               for
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ,1078,109
: hydroxy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         0;
                                                                                                               human
```

```
ATCOSS-references: GB:Z37153; NID:g587203; PIDN:CAA85512.1; PID:g587204 R;Pihlajaniemi, T.; Pohjolainen, E.R.; Myers, J.C. Biol. Chem. 265, 13758-13766, 1990 A;Title: Complete primary structure of the triple-helical region and the A;Reference number: A37122; MUID:90337990 A;Accession: A37122
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Cross-references: GB:UC;Superfamily: collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         J. Biol. Chem. 269, 6608-6614, 1994
A.Title: Structure of the human type IV collagen COL4A5 gene
A; Reference number: A54365; MUID:94165049
A; Accession: A54365
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C;Species: Homo sapiens (man)
C;Date: 30-Sep-1993 #sequence_revision 27-Feb-1997 #text_change 21-Jul-2000
C;Accession: S22917; A54365; A57079; A37122; I54317; A34850; S18850; I56971;
R;Zhou, J; Hertz, J.M.; Leinonen, A.; Tryggvason, K.
J. Biol. Chem. 267, 12475-12481, 1992
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Вþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Cross-references: GB:U04470; NID:9463378; GB:U04520; NID:9463428; PIDN:AAC27816.1; PIR R;Zhou, J.; Mochizuki, T.; Smeets, H.; Antignac, C.; Laurila, P.; de Paepe, A.; Tryggvas Science 261, 1167-1169, 1993
A;Title: Deletion of the paired alpha5(IV) and alpha6(IV) collagen genes in inherited sm A;Reference number: A57079; MUID:93361972
A;Accession: A57079
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Title: Complete amino acid sequence of the
                                                                                                                                                                                                                                                                                                                                                             A;Molecule type: mRNA
A;Residues: 84-439,'GS',442-624,'LALQ',629-666,'FR',669-887,'R',889-1264,1271-1691
A;Residues: 85-439,'GS',558; EMBL:M58526; NID:g1314209
A;Cross references: GB:G05558; EMBL:M58526; NID:g1314209
A;Note: submitted to the EMBL Data Library, February 1991
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;Note: the authors translated the codon GCC for residue 115 as Val
A;N
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Molecule type: DNA
A; Residues: 1-922 <ZI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Molecule type: mRNA
A; Residues: 1-967 <ZHO>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Reference number:
A; Accession: S22917
R;Hostikka, S.L.; Eddy, R.L.; Byers, M.G.; Hoeyhtyae, M.; Shows, T.B.; Tryggvason, proc. Natl. Acad. Sci. U.S.A. 87, 1606-1610, 1990.
A;Title: Identification of a distinct type IV collagen alpha chain with restricted A;Reference number: A34850; MUID:90160375
                                                                                                                                        A;Molecule type: mRNA
A;Residues: 313-324, E;,326-330 <REN>
A;Cross-references: 6B:S59334; NID:g299946; PIDN:AAD13909.1; PID:g4261609
A;Cross-references: B:S59334; NID:g299946; PIDN:AAD13909.1; PID:g4261609
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local
                                                                                                                                                                                                                                                                            A;Status: preliminary; translated from
                                                                                                                                                                                                                                                                                                                               A; Accession: I54317
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Alport syndrome patient
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      agen alpha 5(IV) chain precursor, renal splice form - human ternate names: procollagen alpha 5(IV) chain Contains: collagen alpha 5(IV) chain precursor, leukocyte splice
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      572
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        632
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Local Similarity
nes 52; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61 ALEPYISRCTV 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SIQPFISRCAV 642
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1-922 <ZH2>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GB:U07888; NID:g469547; agen alpha 1(IV) chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    S22917; MUID:92316923
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      80.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 314; DB 2; J
pred. No. 1.6e-29;
""matches 6;
                                                                                                                                                                                                                                                                                                          GB/EMBL/DDBC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PIDN:AAB60258.1; PID:g469548
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PIDN:AAA52046.1; PID:g553234
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          alpha-5(IV)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  collagen chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          156971;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      carboxy1-termi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              176598;
                                                                                                                                                                                                                                                                                                                                                                                                                                          acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ident
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     <PIH>
                                                                                                                                                         ~
                                                                                                                                                                                                                                                                                                                                                                                                                                          in
                                      A;Description: minor structural component of extracellular basement C;Superfamily: collagen alpha 1(IV) chain C;Keywords: Alport syndrome; basement membrane; coiled coil; extrace
```

```
A;Cross-references: EMBL:M31115; NID:9180824; R.Zhou, J.; Hostikka, S.L.; Chow, L.T.; Try99v Genomics 9, 1-9, 1991
A;Title: Characterization of the 3' half of the A;Reference number: A37969; MUID:91169491
A;Accession: S18850
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  R;Guo, C.; Van Damme, B.; Van Damme-Lombaerts, Kidney Int. 44, 1316-1321, 1993
A;Title: Differential splicing of COL4A5 mRNA A;Referrence number: 156971; MUID:94133540
A;Accession: 156971
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Accession: A34850
A; Molecule type: mRNA
A; Residues: 914-1264
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A; Molecule type: mRNA
A; Residues: 1284-1291, TFLGYLACLY <GU02>
A; Residues: 1284-1291, TFLGYLACLY <GU02>
A; Ross references: GB: 569169; NID: 9545097; PIDN: AAC60613.1;
A; Cross references: GB: 569169; NID: 9545097; PIDN: AAC60613.1;
A; Note: frameshift mutation in patient with Alport syndrome
A; Myers, J.C.; Jones, T.A.; Pohjolainen, E.R.; Kadri, A.S.; G
Am. J. Hum. Genet. 46, 1024-1033, 1990
A; Title: Molecular cloning of alpha5(1Y) collagen and assignm
A; Reference number: A35335; MUID: 90252791
A; Accession: A35335
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Status: translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1258-1276 <GUO1>
A;Cross-references: GB:S69168; NID:g545095;
A;Note: kidney splice form
A;Accession: 176598
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A;Cross-references: GB:S75903; NID:g913882; PIDN:AAB33374.1; PID:g913883 A;Cross-references: GB:S75903; NID:g913882; PIDN:AAB33374.1; PID:g913883 A;Cross-references: GB:S75903; NID:g913882; PIDN:AAB33374.1; PID:g913883 A;Cross-reference content for mutation from a patient with Alport syndrome; one other content of the c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    R; Nakazato, H.; Hattori, S.; Ushijima, T.; Matsu Kidney Int. 46, 1307-1314, 1994
A; Title: Mutations in the COLIA5 gene in Alport A; Reference number: I56975; MUID:95156893
A; Accession: I56975
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    8; EMBL:M63470;
C;Genetics:
A;Gene: GDB:COLAA5; ATS
A;Gene: GDB:COLAA5; ATS
A;Gene: GDB:COLAA5; ATS
A;Cross-references: GDB:120596; OMIM:303630
A;Map position: Xq22-Xq22
A;Map position: Xq22-Xq22
A;Introns: 27/3; 47/3; 77/3; 92/3; 107/3; 128/3; 146/3; 155/3; 182/3; 203/3; 215/3; 2
A;Introns: 27/3; 47/3; 77/3; 92/3; 973/1; 1006/1; 1036/1; 1082/3; 1125/1; 1152/1; 1185/1
/3; 799/1; 837/1; 893/1; 923/1; 973/1; 1006/1; 1006/1; 10082/3; 1125/1; 1152/1; 1185/1
A;Note: the alpha 5(IV) and alpha 6(IV) chain genes are encoded on opposite strands war, nonplex: This minor type IV collagen is thought to form a heterotrimer of two alpha c;Complex: This minor type IV collagen is thought to form a heterotrimer of constitution on trimer aminor-terminal domains (with disulfide and desmosine cross er associations in the interrupted helical domain (with disulfide and desmosine cross C;Finction:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Status: translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Molecule type: mRNA
A; Residues: 1448-1477 <MYE>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Cross-references: GB:S65767; NID:g425563; PIDN:AAD13967.1; PID:g4261667 A;Note: frameshift mutation from a patient with Alport syndrome; five other mutations C;Comment: Prolines and lysines at the third position of the tripeptide repeating unied and subsequently O-glycosylated.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Residues:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A;Status: nucleic acid sequence not shown
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A; Molecule type: DNA
A; Residues: 1604-1607, 'VHDAYKC' <LEM>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Status: translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Molecule type: DNA
A; Residues: 1595-1602 <NAK>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Status: translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ACCESSACE DIA (ACCESSACE DIA (ACCESS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   914-1264,1271-1691 <HOS>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Tryggvason,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matsuura, T:;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               the human
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PIDN: AAC60612.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PIDN:AAA52045.1; PID:g180825
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          in kidney and white
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           syndrome:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      type
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              assignment of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A.S.; Goddard, A.D.; Sheer,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Koitabashi,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         þ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  EMBL:M63458; EMBL:M6345:g177922; PIDN:AAA51558.Berghe, H.; Cassiman, J
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             IV collagen alpha-5
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PID:g545098
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PID:g545096
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              blood cells: a comp
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      H.; Cassiman, J.J
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ¥.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               mutation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      EMBL: M63459;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  gene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         one other
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ţ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      in
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               prim
```

coiled coil; extracellular matrix;

```
A;Title: Cloning of alphal(IV) and al
A;Reference number: A61228; MUID:9201
A;Accession: B61228
A;Status: preliminary
A;Molecule type: mRNA
A;Residues: 1-258 <74Mb
C;Superfamily: collagen alpha 1(IV) of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     F;1-26/Domain: signal sequence *status predicted <SIG>
F;27-1691/Product: collagen alpha 5(IV) chain, renal splice form *status predicted <MATIF;27-1264,1271-1691/Product: collagen alpha 5(IV) chain, leukocyte splice form *status F;27-41/Domain: amino-terminal nonhelical, NC2 *status predicted <NC2>
F;27-41/Domain: interrupted helical
F;142-162/Region: interrupted helical
F;1463-1691/Domain: carboxyl-terminal nonhelical, NC1 *status predicted <NC1>
F;1473-1573/Domain: collagen IV carboxyl-terminal repeat <CT1>
                                                                                                                                                                                                                C;Species: Oryctolagus cuniculus (domestic rabbit) C;Date: 12-May-1994 #sequence_revision 12-May-1994 C;Accession: B61228
                                                                                                                                                                                                                                                                                                                                                                                                                                                 õ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A;Status: preliminary
A;Molecule type: mRNA
A;Residues; 1-161 <OBE>
A;Cross references: EMBL:X82205; NID:g559472;
C;Superfamily: collagen alpha 1(IV) chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            C;Species: Mus musculus (house mouse)
C;Date: 20-Feb-1995 #sequence_revision
C;Accession: S49488
R;Oberbaeumer, I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             F:1473-1573/Domain: collagen IV carboxyl-terminal repeat <CT1>
F:1873-1687/Domain: collagen IV carboxyl-terminal repeat <CT2>
F:1883-1687/Domain: collagen IV carboxyl-terminal repeat <CT2>
F:199.32.88.40,124.451,481,484/Disulfide bonds: interchain #status predicted F:125/Binding site: carbohydrate (Asn) (covalent) #status predicted F:125/Binding site: carbohydrate (Asn) (covalent) #status predicted F:1482-1570,1515-1570) #status predicted F:1482-1573,1538-1644/Disulfide bonds: (or 1482-1573, 1535-1590) #status predicted F:1527-1533,1638-1644/Disulfide bonds: (or 1592-1687, 1626-1684) #status predicted F:1592-1684,1626-1687/Disulfide bonds: (or 1592-1687, 1626-1684) #status predicted F:1592-1684,1626-1687/Disulfide bonds: (or 1592-1687, 1626-1684)
                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Reference number: A; Accession: S49488
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               submitted to the EMBL Data Library, October 1994 A; Description: Cloning of the NC1 domains fo the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Q
                                                                                                                                                                                         R; Yamaguchi, N.;
                                                                                                                                                                                                                                                                                        collagen alpha
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ells
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               collagen alpha
                                                                                                                                                                   Invest. Ophthalmol.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     tches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1562
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               1502 KRAHGQDLGTAGSCLRRFSTMPFMFCNINNVCNFASRNDYSYWLSTPEPMPMSMQPLKGQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                      13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  61
                                                                                                                                                                                                                                                                                                                                                                                                            -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                10
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            1 QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60
                                                                                                                                                                                                                                                                                                                                                                                                       SIQPFISRCAV 1572
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                ALEPYISRCTV 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Similarity
                                                                                                                                                                                                                                                                                     1(IV) chain - rabbit (fragment)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               3(IV) chain - mouse
                                                                                                                                                                 Sato, N.; Ko, J.: ol. Vis. Sci. 32,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  S49487
alpha 1(IV) chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 80.5%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         79.7%;
                                                                                                                  IV) and alpha2(IV) collagen
MUID:92010685
                                                                                                                                                                 J.S.; Ninomiya, Y.
32, 2924-2930, 1991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score 314; DB
Pred. No. 3.6e
13; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 311;
Pred. No. 7
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             20-Feb-1995 #text_change
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 DB 1;
1.6e-29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 2;
.4e-30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PIDN:CAA57689.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 minor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             6;
                                                                                                                                                                                                                                      #text_change
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Length 1691;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Length 161;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          1626-1684) #status predicted
                                                                                                                                             cDNAs from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              PID:g559916
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             13-Aug-1999
                                                                                                                                                                                                                                         17-Mar-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 ٧I
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
                                                                                                                                             rabbit corneal endoth
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               chains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 1561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 mouse via
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             0;
```

```
A; Molecule type: mRNĀ
A; Residues: 'P',633-1537,'G' <WES>
A; Residues: 'P',633-1537,'G' <WES>
A; Cross-references: GB:564572; NID:9238616; PIDN:AAB20270.1;
A; Note: sequence extracted from NCBI backbone (NCBIN:64572, NC; Note: sequence extracted from NCBI backbone (NCBIN:64572, NC; Note: sequence extracted from NCBI backbone (NCBIN:64572, NC; Note: Sequence extracted from NCBI backbone (NCBIN:64572, NCBIN:64572, NCBI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             C;Superfamily: collagen alpha 1(IV) chain C;Keywords: colled coll; extracellular matrix; F;29-161/Domain: amino-terminal nohhelical, 7S F;162-1523/Region: interrupted helical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           collagen alpha 3(IV) chain - sea urchin (Strongylocentrotus purpuratus)
c;Species: Strongylocentrotus purpuratus (purple urchin)
C;Date: 22-Sep_193 #sequence_revision 18-Nov-1994 #text_change 13-Aug-1999
C;Accession: A45407; A43903; A23940
R;Exposito, J.Y.; D'Alessio, M.; Di Liberto, M.; Ramirez, F.
J. Biol. Chem. 268, 5249-5254, 1993
A;Title: Complete primary structure of a sea urchin type IV collagen alpha (A)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 RESULT
A45407
В
                                                                         Qy
                                                                                                                                                           В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              F;1524-1752/Domain: carboxyl-terminal nonhelical, NC1 <NC1>F;1534-1634/Domain: collagen IV carboxyl-terminal repeat <CT1>F;1644-1748/Domain: collagen IV carboxyl-terminal repeat <CT2>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Molecule type: DNA
A; Residues: 742-812 <VEN>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Reference number: A43903; MUID: 92038439
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Title: Primary mesenchyme cells of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             R; Wessel, G.M.; Etkin, M.; Be
Dev. Biol. 148, 261-272, 1991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A; Note: sequence extracted from NCBI backbone (NCBIP:126841) R; Wessel, G.M.; Etkin, M.; Benson, S.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A;Status: preliminary; not compared with conceptual translation A;Molecule type: nucleic acid A;Residues: 1-1752 <EXP>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Ω
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DЬ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         20
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Cross-references: EMBL:M13206
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Accession: A23940
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Accession: A43903
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             A; Accession: A45407
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Reference number:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              129/Modified site:
                                                                                                                                                                                                                                                                                                                      Matches
                                                                                                                                                                                                                                                                                                                                                   Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Best Local
1623
                                                                                                                                                       1563 ERGHGQDLGKPGSCLKRFSTMPFLFCNINNVCHVASRNDYSYWLSTTEPMPMNMAPIRGG 1622
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            129 NIRPFITRCAV 139
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   69
                                                                             61 ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 61 ALEPYISRCTV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1 QRAHGQDLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60
QLQPFISRCVV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   ERAHGQDLGTAGSCLRKFSTMPFLFCNINNVCNFASRNDYSYWLSTPEPMPMSMAPMWGD 128
                                                                                                                                                                                                                                                                                                                                                   Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A45407; MUID:93186842
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              allysine
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   78.5%;
73.2%;
                                                                                                                                                                                                                                                                                                                                                   75.48;
73.28;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              (Lys) #status
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              11;
                                                                                                                                                                                                                                                                                                              8,
                                                                                                                                                                                                                                                                                                              Score 294; DB 2
Pred. No. 9e-27;
8; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 306; DB 2;
Pred. No. 4.7e-29;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            the sea
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        urchin embryo require an autonomously pr
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          glycoprotein; trimer;
<7SD>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8
                                                                                                                                                                                                                                                                                                                                                                                           Length 1752;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 258
                                                                                                                                                                                                                                                                                                                  Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    of a Strongylocentrotus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ; PID:g238617
NCBIP:64573)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   collagen alpha chain
                                                                                                                                                                                                                                                                                                              0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0,
                                                                                                                                                                                                                                                                                                              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              triple helix
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
                                                                                                                                                                                                                                                                                                                  0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              0,
```

ъ

hypothetical protein F01G12.5a - C; Species: Caenorhabditis elegans

Caenorhabditis

elegans

RESULT

13

T29350

```
C;Date: 15-Oc
C;Accession:
R;Wu, X.; Le,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       R;Wu, X.; Le, T.T. submitted to the EMBL Data Library, April 1996 A;Description: The sequence of C. elegans cosmid F01G12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       γQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Вþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         δÕ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Map position: X
A;Introns: 8/2; 26/3; 47/3; 81/1; 144/1; 202/3; 228/3; C;Superfamily: collagen alpha 1(IV) chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Cross-references: EMBL:U53342; PIDN:AAA96216.1; GSPDB:GN00028; CESP:F01G12.5a
A;Experimental source: strain Bristol N2; clone F01G12
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Molecule type: DNA
A; Residues: 1-1758 <WUX>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                A; Reference number: Z20611
A; Accession: T29350
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Status: preliminary; translated from GB/EMBL/DDBJ
A;MoLecule type: DNA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             collagen alpha 2(IV) chain precursor let-2 - Caenorhabditis elegans N;Alternate names: collagen alpha 2(IV) chain precursor clb-1 C;Species: Ciaenorhabditis elegans C;Date: 15-Oct-1999 #sequence_revision 15-Oct-1999 #text_change 18-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Gene:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           C; Genetics
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Status: preliminary; translated from GB/EMBL/DDBJ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Map position: X
A;Introns: 8/2; 26/3; 47/3; 81/1; 144/1; 202/3; 228/3; 265/3; 304/3; 359/3; 450/2; 737/
C;Superfamily: collagen alpha 1(IV) chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               submitted to the EMBL Data Library, April 1996 A; Description: The sequence of C. elegans cosmid F01G12.
RESULT 15
$16366
collagen alpha 2(IV) chain
C;Species: Ascaris suum (pi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Reference number: A; Accession: T29351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Description: The sequence A; Reference number: Z20611
                                                                                                                                                                                                                                밁
                                                                                                                                                                                                                                                                                               Ş
                                                                                                                                                                                                                                                                                                                                                                          В
                                                                                                                                                                                                                                                                                                                                                                                                                                                 δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Accession: T29351
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Gene: CESP:F01G12.5a
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ery Match
st Local s
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      1566
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1624 EIEPYISRCAV 1634
                                                                                                                                                                                                                        :||||||| |
1625 EIEPYISRCAV 1635
                                                                                                                                                                                                                                                                                                                                                                                  1567
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   etics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               61 ALEPYISRCTV 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local Similarity
mes 46; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         15-Oct-1999 #sequence_revision 15-Oct-1999 #text_change 18-Feb-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     1 QRAHGQDLGTLGSCLQRETTMEFLECNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            CESP: F01G12.5a
                                                                                                                                                                                                                                                                                                       61 ALEPYISRCTV 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          14
                                                                                                                                                                                                                                                                                                                                                                                                                     EKSHNQDLGHAGSCLQRFSTMPFLFCDFNNVCNYASRNDKSYWLSTSEAIP--MMPVNER 1623
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Le, T.T
                                                                                                                                                                                                                                                                                                                                                                          46;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Conservative
nin precursor - (pig roundworm)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           65.9%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                65.9%; Score 257; DB 2;
64.8%; Pred. No. 2.3e-22;
tive 10; Mismatches 13;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    10;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Score 257; DB 2;
Pred. No. 2.3e-22;
0; Mismatches 13
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        GB/EMBL/DDBJ
                                           pig roundworm
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    #text_change 18-Feb-2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Length 1759;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Length 1758;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         264/3; 303/3;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            358/3; 449/2; 736/
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ŗ
```

Job time: 222 sec

April 13, 2001, 15:42:41

```
F;43-1529/Domain: collagenous #status predicted <COL>
F;197-199/Region: cell attachment (R-G-D) motif
F;1530-1763/Domain: carboxyl-terminal nonhelical, NC1 #status predicted <NC1>
F;1530-1638/Domain: repeat NC1 #status predicted <NC11>
F;1639-1763/Domain: repeat NC1 #status predicted <NC12>
F;1639-1763/Domain: repeat NC1 #status predicted <NC12>
F;1639-1763/Domain: repeat NC1 #status predicted <F;31,34,39,41,536,539/Disulfide bonds: interchain #status predicted
F;156/Binding site: carbohydrate (Asn) (covalent) #status predicted
F;1593-1599,1702-1709/Disulfide bonds: #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         J. Biol. Chem. 266, 16149-16156, 1991
A;Title: The complete primary structure of a nematode alpha-2(IV) collagen and
A;Reference number: S16366; MUID:91340768
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         F;27-1763/Product: collagen alpha 2(IV) chain #status F;27-42/Domain: non-collagenous NHI #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           A;Introns: 229/3; 266/3; 305/3; 360/3; 424/1; 489/1; 548/1; 656/3; 790/1; 891/1; 963/C;Superfamily: collagen alpha 1(IV) chain C;Keywords: alternative splicing; basement membrane; cell binding; coiled coil; disul
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             C;Date: 04-Dec-1992 #sequence_revision 04-Dec-1992 #text_change 13-Aug-1999 C;Accession: S16366
밁
                                                   δÃ
                                                                                                                밁
                                                                                                                                                                 Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C; Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A;Cross-references: GB:M67507; NID:g159648; PIDN:AAA18014.1; PID:g159649
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Molecule type: mRNA
A; Residues: 1-1763 <JBI>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Accession: S16366
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  R; Pettitt,
                                                                                                                                                                                                                                                         Query Match
Best Local Similarity
                                                                                                                                                                                                                              Matches
1626 GIEPYISRCAV 1636
                                                                                                                1568
                                                      61 ALEPYISRCTV 71
                                                                                                                                                                    1 QRAHGODLGTLGSCLQRFTTMPFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGR 60
                                                                                                             Kingston,
                                                                                                                                                                                                                              Conservative
                                                                                                                                                                                                                                                         65.6%; Score 256; DB 2; 64.8%; Pred. No. 3e-22;
                                                                                                                                                                                                                                    Mismatches
                                                                                                                                                                                                                                       12;
                                                                                                                                                                                                                                                                                           Length 1763;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     predicted
                                                                                                                                                                                                                                       2
                                                                                                                                                                                                                                       Gaps
                                                                                                                                                                                                                                          1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       the pa
```

THIS PAGE BLANK USERLE

THIS PACE BLANK USE TO



GenCore version 4.5 Copyright (c) 1993 - 2000 Comp

Compugen Ltd

OM protein - protein search, using sw model

Run on: April 14, 2001, 08:56:23; Search time 13.78 Seconds (without alignments)
94.756 Million cell updates/sec

Title: Perfect score: US-09-543-371-10_COPY_185_203

SPFLECHGRGTCNYYSNSY 19

Scoring table:

Sequence:

BLOSUM62 Gapop 10.0 , Gapext 0.5

198801 seqs,

68722935 residues

Searched:

number of hits satisfying chosen parameters:

198801

Minimum DB Maximum DB seq length: 0 seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100% Listing first 45 summaries

Database PIR_67:* pir2:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	_U	4	ω	2	1	No.	Result
59.5	68.5		•	70	70.5	72.5	•	73.5	73.5	74.5		80.5	80.5	81	88	92	104	104	104	106	107	107	107	109	113	113	113	115	score	
51.7	59.6	•	•	•	•	•	•	•	•	64.8	•		•	•	•	80.0	•	•	90.4	•	•		•	94.8				•		Query
1775	1759	1758	261	1761	312	1763	1690	623	453	1691	1707	1712	775	1747	1752	1744	1669	1669	258	58	1691	754	253	79	471	246	161	1670	Length	
2	N	N	N	N	2	N	_	N	ν	Н	N	-ب	N	2	2	2	 	ب	2	N	ب	N	2	2	2	N	2	ш	BB	
A31893	T29351	T29350	A34476	T13990	I48303	S16366	CGHU1B	A45137	S18804	ССНИ6В	A33526	ССНU2В	A61228	A54121	A45407	\$40991	CGMS4B	CGHU4B	в61228	B43928	S22917	A55267	-148304	C43928	A39024	148302	S49488	сснизв	ID	
collagen alpha 1(I	alpha 2	hypothetical prote	collagen alpha 2(I	collagen type IV a	alpha 4(2(alpha 4(4	alpha 4(alpha	alpha 2(alpha 2(alpha 2(4	alpha 3(alpha 1(alpha 1(alpha 1(alpha 5(alpha 5(collag	alpha 3(collagen alpha 3(I	alpha 3($\overline{}$	Description	•

45	44	43	42	41	40	39	38	37 .	36	ω 5	34	33	32	31	30
45	45	46	46	46	46	46	46	47	47	47	47	48	48	49.5	56
39.1	39.1	40.0	40.0	40.0	40.0	40.0	40.0	40.9	40.9	40.9	40.9	41.7	41.7	43.0	48.7
378	230	2471	1203	777	740	703	240	9.05	825	600	204	660	176	985	903
N	Ν	N	N	N	2	N	N	N	ν	2	2	N	2	ນ	2
T18486	T31722	A49128	A49175	148100	A71141	G82249	T14978	S55059	S55060	149281	T08072	S71949	в70606	S67255	S60257
hypothetical prot	hypothetical proto	cell-fate determin	Motch B protein -	ADAM 5 protein pro	hypothetical prote	asmA protein VC103	hypothetical prot	fertilin alpha-I	fertilin alpha-II	fertilin alpha pro	proteinase inhibit	metalloproteinase	hypothetical prote	REV1 protein - yea	meltrin alpha - m

ALIGNMENTS

collagen alpha 3(IV) chain precursor, long splice form - human N;Alternate names: Goodpasture antigen; procollagen alpha 3(IV) chain long splice for C; Species:

C; Date: es: Homo sapiens (man)
28-Oct-1994 #sequence_revision 03-Oct-1995 #text_change 22-Jun-1999
510n: A54763; A43928; A44043; A45971; A39286

; Leinonen, A.; Mochizuki, T.; Tryggvason, K.; Reeders, S.T. 269, 23013-23017, 1994

A;Reference number: A54763; MUID:94364994 Title: Complete primary structure of the human alpha3(IV) collagen chain. Coexpress

A; Accession: A54763

A;Molecule type: mRNA A;Residues: 1-1670 <MAR> A;Cross-references: GB:X80031; NID:g577563; PID:g577564

A; Experimental source: R; Turner, N.; Mason, P. J. Clin. Invest. 89, 59 Brown, R.; Fox, M.; Povey, S.; Rees, A.; Pusey, C.D.

7. Clin. Invest. 89, 592-601, 1992 A;Title: Molecular cloning of the human Goodpasture antigen A;Reference number: A43928; MUID:92147878 P.J.; Bro 592-601, 1992 demonstrates į÷ to be the

A; Accession: A43928

A; Molecule type: mRNA
A; Residues: 1331-1524, 'I', 1526-1670 <TUR>
A; Cross-references: GB: M81379

J. Biol. A; Experimental source: kidney
R: Oulnones, S.:..Bernal, D.:: Garc:
J. Biol "Chem. 267, 19780-19784, -Garcia-Sogo, M.; Elena, S.F.; Saus, J....

A; Title: Exon/intron structure of the human-alpha-3(IV)-gene-encompassing the Goodpas

A;Reference number: A44043; MUID:93015826 A;Accession: A44043

A; Molecule type: DNA; mRNA
A; Residues: 1386-1670 CQUI>
A; Residues: 1386-1670 CQUI>
A; Cross-references: GB:M92993; NID:g177895; PIDN:AAA21610.1; PID:g177896
A; NDIe: sequence extracted from NCBI backbone (NCBIP:115597)
A; NDIe: sequence extracted from NCBI backbone (NCBIP:115597)
A; NOULD: SOURCE (NCBIP:115597)
A; Reference number: A44738; MUID:94274734

A; Contents: annotation; erratum; correction to intronic sequence in A44043 Biol. Chem. -D-;-Quinones,

A; Reference number: A45971; MUID:93280184 268, 12090-12094, 1993 the Goodpasture antigen is alternatively spliced.

A; Accession: A45971 nucleic acid sequence not shown

A; Molecule type: mRNA A; Residues: 1427-1444 <BER>

A; Note: sequence extracted from NCBI backbone R; Morrison, K.E.; Mariyama, M.; Yang-Feng, T.I rang-Feng, sequence incorrectly id

Am. J. Hum. Genet. 49, A39786; MUID:91353570 1991

```
A;Accession: A39786
A;Molecule type: mRNA
A;Residues: 1453-1593, 'A',1595-1670 <MOR>
A;Coross-references: GB:S55790; NID:g234418; PIDN:AAB19637.1;
C;Comment: Prolines and lysines at the third position of the ed and subsequently O-glycosylated.
C:Comment: In Goodpasture's syndrome, an autoimmune response C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A;Description: minor structural component of extracellular basement membrane in kidney (C;Superfamily: collagen alpha 1(IV) chain ywords: alternative splicing; basement membrane; cell binding; coiled coil; extrace: 28/Domain: signal sequence #status predicted <SIG>167/O/Product: collagen alpha 3(IV) chain, long splice form #status predicted <MAT> p:29-12/Domain: amino-terminal nonhelical, NH1 <NH1>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A;Introns: 1385/1; 1418/1; 1488/1; 1547/2; 155/3; 1643/2 #status incomplete R;Note: the alpha 3(IV) and alpha 4(IV) chain genes are encoded on opposite strands with C;Complex: This minor type IV collagen is thought to form a heterotrimer of two alpha 3 mong trimer amino-terminal domains (with disulfide and desmosine cross-links), dimeric er associations in the interrupted helical domain (with disulfide and desmosine cross-
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Map position: 2q36-2q37
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            F;1439-1670/Domain: Carboxyl-terminal nonhelical, NC1 <NC1>
F;1449-1670/Domain: Collagen IV carboxyl-terminal repeat <CT1>
F;1561-1665/Domain: collagen IV carboxyl-terminal repeat <CT2>
F;153,133,39,41,125,422,476,479,682,722,809,1387/Disulfide bonds: interchain #status F;253/Binding site: carbohydrate (Asn) (covalent) #status predicted F;1505-1511,1616-1622/Disulfide bonds: (or 1460-1551, 1493-1548) #status predicted F;1505-1511,1616-1622/Disulfide bonds: (or 1570-1665, 1604-1662) #status predicted F;1505-1510,1616-1662/Disulfide bonds: (or 1570-1665, 1604-1662) #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       F;791-793/Region: cell attachment (R-G-D) motif
F;996-998/Region: cell attachment (R-G-D) motif
F;1154-1156/Region: cell attachment (R-G-D) motif
F;1306-1308/Region: cell attachment (R-G-D) motif
F;1345-1347/Region: cell attachment (R-G-D) motif
F;1432-1434/Region: cell attachment (R-G-D) motif
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Cross-references: GDB:128351; OMIM:120070
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Gene: GDB: COL4A3
                                                                                                                                                                                                                                                                                                                                  R;Oberbaeumer, 1.

R;Oberbaeumer, 1.

submitted to the EMBL Data Library, October 1.

submitted to the EMBL Data Library, October 1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     망
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                            collagen alpha 3(IV) chain - mouse
C;Species: Mus musculus (house mouse)
C;Date: 20-Feb 1995 #sequence_revision
                                                                                                                                A;Cross-references: EMBL:X82205; NID:g559472; C;Superfamily: collagen alpha 1(IV) chain
                                                                                                                                                                                      A; Molecule type: mRNA
A; Residues: 1-161 <OBE>
                                                                                                                                                                                                                                            A; Status: preliminary
                                                                                                                                                                                                                                                                      A; Accession: S49488
                                                                                                                                                                                                                                                                                                  A; Reference number:
                                                                                                                                                                                                                                                                                                                            ells
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ;43-1438/Region: interrupted helical
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Query Match
Best Local
                         Dest Local
                                                                                                                                                                                                                                                                                                                                                                                                                                        Accession:
Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             1 SPFLECHGRGTCNYYSNSY 19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SPFLECHGRGTCNYYSNSY 1629
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  l Similarity
19; Conser
     18;
                                                                                                                                                                                                                                                                                                                                                                                                                                     S49488
                               Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        1418/1; 1488/1; 1547/2; 1585/3; 1643/2 #status incomplete
                                                                                                                                                                                                                                                                                                  S49487
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           100.0%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
  Score 113; DB 2;
Pred. No. 2.6e-09;
1; Mismatches (
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Score 115; D
Pred. No. 9.1
0; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                     October 1994
                                                                                                                                                                                                                                                                                                                                                                                                                                                                     20-Feb-1995
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         DB 1,
9.1e-09;
0;
                                                                                                                                                                                                                                                                                                                                                              the
                                                                                                                                                                        PIDN:CAA57689.1; PID:g559916
                                                                                                                                                                                                                                                                                                                                                           minor collagen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  #text_change 13-Aug-1999
           0;
                                                         Length 161;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Length 1670;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PID:g234419
tripeptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 develops against an
                                                                                                                                                                                                                                                                                                                                                                 IV chains
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
              0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Gaps
              Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          repeating
                                                                                                                                                                                                                                                                                                                                                                    of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           strands with
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                 mouse via
              0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       epitope
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             unit
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    pred
```

SPFLECHGRGTCNYYSNSY 19

```
collagen alpha 3(IV) chain - mouse (fragment)
C;Species: Mus musculus (house mouse)
C;Date: 15-Mar-1996 #sequence_revision 15-Mar-1996 #text_change 16-Feb-1997
C;Accession: I48302; S47278
R;Miner, J.H.; Sanes, J.R.
J. Cell Biol. 127, 879-891, 1994
A;Title: Collagen IV alpha 3, alpha 4, and alpha 5 chains in rodent basal 1.
A;Beference number: A54979; MUID:95050957
A;Accession: I48302
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A;Molecule type: mRNA
A;Residues: 1-246 <RES>
A;Cross-references: EMBL:Z35166; NID:g535197;
C;Superfamily: collagen alpha 1(IV) chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    엄
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   J. Biol.
A;Title:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  C;Species: Bos primigenius taurus (cattle)
C;Date: 04-Dec-1992 #sequence_revision 04-Dec-1992 #text_change 13-Aug-1999
C;Accession: A39024; S20672; S17802; A35167; C39419; S13747; S20815
C;Accession: A39024; S20672; S17802; A35167; C39419; S13747; S20815
R;Morrison, K.E.; Germino, G.G.; Reeders, S.T.
J. Biol. Chem. 266, 34-39, 1991
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            В
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             δÃ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A; Status: preliminary
                                                                                                                                                                                                                                                                                                                          A;Molecule type: protein
A;Residues: 227-228,'X',230-244 <BUT>
A;Residues: 227-228,'X', 230-244 <BUT>
B;Saus, J.; Wieslander, J.; Langeveld, J.P.
J. Biol. Chem. 263, 13374-13380, 1988
A;Title: Identification of the Goodpasture
A;Reference number: S17802; MUID:88330844
A;Accession: S17802
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      A;Title: Use of the polymerase chain reaction to clone and sequence a cDNA encoding A;Reference number: A39024; MUID:91093146 A;Accession: A39024
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      collagen alpha 3(IV) chain - bovine (fragment)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Title: Localization of the Goodpasture epitope A; Reference number: $18432; MUID:87222419 A; Accession: $20672
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A;Cross-references: EMBL:M63139; NID:g162886; PID
R;Butkowski, R.J.; Langeveld, J.P.M.; Wieslander,
J. Biol. Chem. 262, 7874-7877, 1987
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Molecule type: mRNA
A; Residues: 1-471 < MOR>
                                                                                                                                                                                      A; Reference number: A; Accession: A35167
                                                                                                                                                                                                                                              A; Molecule type: protein
A; Residues: 227-228, 'X', 330-252, 'Y',
R; Ganwar S.; Saus, J.; Noelken, M.I
J. Biol. Chem. 265, 5466-5469, 1990
                                  A; Accession: C39419
                                                      A; Reference number:
                                                                                                                                        A; Molecule type: protein A; Residues: 236-258 <GUN>
                                                                                                                                                                                                                             A; Title: Glomerular
                                                                                  A;Title: Glomerular
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Matches.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query Match
Best Local :
;Molecule type: protein
;Residues: 236-255 <GU2
                                                                                                     Biol. Chem. 266,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      120
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            187
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    1 SPFLECHGRGTCNYYSNSY 19
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    SPFIECHGRGTCNYYSNSY 138
                                                                                               S.; Ballester, F.; Na..
Chem. 266, 15318-15324,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        lpha 3(IV) chain - mouse (fragment)
Mus musculus (house mouse)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                                                                                         A35167; MUID:90202779
                                                              A39419; MUID:91332055
                                                                                  basement membrane
                                                                                                                                                                                                                             basement membrane. Identification
                                                                                                                                                                                                                                                                                          230-252, 'Y', 254 <SAU>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                98.3%;
                                                                                                                           Kalluri,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score
Pred.
                                                                                                          1991
                                                                                                                                                                                                                                                                        M.E.; Hudson,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Mismatches
                                                                                                                         R.; Timoneda,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  .113;
No. 3.
                                                                                                                                                                                                                                                                                                                                                                                                                   J.P.M.;
                                                                                      Identification
                                                                                                                                                                                                                                                                                                                                                                            antigen
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 2;
.7e-09;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PID:g535198
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            PIDN:AAA62708.1;
der, J.; Hamilton,
                                                                                                                                                                                                                                                                          B.G.
                                                                                                                                                                                                                                                                                                                                                                                                                   Quinones, S.; Hudson,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0,
                                                                                                                                                                                                                                                                                                                                                                              as
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         a
                                                                                                                                J.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Length 246;
                                                                                                                                                                                                                                                                                                                                                                                the
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         novel
                                                                                                                                                                                                                                   of
                                                                                        of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Indels
                                                                                                                                  Chonko, A.M.;
                                                                                                                                                                                                                                     a
                                                                                        dimeric
                                                                                                                                                                                                                                                                                                                                                                              alpha-3(IV)
                                                                                                                                                                                                                                     fourth chain,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           chain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    rodent basal laminae:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        PID:g162887
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    J.; Hudson,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   0;
                                                                                           subunits
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             of basement membran
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                          B.G
                                                                                                                                                                                                                                                                                                                                                                                   chain
                                                                                                                                    Edwards, S.J.;
                                                                                                                                                                                                                                        alpha4,
                                                                                           ٥f
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       В
                                                                                                                                                                                                                                                                                                                                                                                   of collag
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       0,
                                                                                           the none
```

GenCore version 4.5 Copyright (c) 1993 - 2000 Compugen Ltd.

OM protein - protein search, using sw model

Run on: April 13, 2001, 15:44:43; Search time 13.93 Seconds

without alignments)
§0.275 Million cell updates/sec

US-09-543-371-10_COPY_54_124

Sequence: Perfect score:

Title:

1 QRAHGQDLGTLGSCLQRFTT..MNMAPITGRALEPYISRCTV 71

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 198801 seqs, 68722935 residues

number of hits satisfying chosen parameters:

17386

Minimum DB seq Maximum DB seq length: 0 length: 71

Post-processing: Minimum Match 0% Maximum Match 100%

Listing first 45 summaries

Database : PIR_67:*
1: pir1:*
2: pir2:*
3: pir3:*

pir4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	80	7	6	ر. ن	4	ω.	2	1	- NO.	Result
38		38.5	38.5	38.5	38.	39	39	39	39	39	39.5	39.5	40	40	41	41	41.5	41.5	42	42	43	43	43	43.5	44.5	45	45.5	78.5	score	
9.7	9.7	9.9	9.9	9.9	9.9	10.0	10.0	10.0	10.0	10.0	10.1	10.1	10.3	10.3	10.5	10.5	10.6	10.6	10.8	10.8	11.0	11.0	11.0	11.2	11.4	11.5	11.7	20.1	Match I	Query
42	29	89	63	55	52	70	60	55	49	42	69	64	64	60	60	29	57	55	67	64	70	34	30	52	66	61	61	58	Length DB	
2 JT051	2 в43937	2 JU0034			1 W8WLB4			2 B35752						A3698	2 G8247							2 C70227		H7212	G8262		2 D70246	B4392	B ID	
4	7	4	U	4	4	0	4	2	9	0	7	_	80	9	2	6	4	0	6	0	1	7	1	4	ō		σ	œ		
Ig	er	10	ζď	t	E8	Ιg	ıın.	50	sı	ζų	ζų	k∈	ζų	ca	ζď	Z,	16	ָל לַל	ζď	ζď	भ	द्	Đ,	, Tu	'n	pr	र्प र	īď		ı
, heavy	1do-1,4-	ong neur	nypothetical	riacylglycerol			mucin 5AC	caltrin-l	ıperoxid	hypothetical	hypothetical	keratinocyte	hypothetical	calcicludine	hypothetical	\DH dehy	owth mo	nypothetical	nypothetica	hypothetica	hypothetica	nypothetica	hypothetica	hypothetica	hypothetica	proteinase	hypothetical	probable (Description	
heavy chain V-	endo-1,4-beta-xyla	long neurotoxin ho	cal prote	\vdash	n - bovin	heavy chain V	(c1	like prote	superoxide dismuta				cal prote		cal prote	NADH dehydrogenas	a		_	٢	_	_	_	۲	al prot	inhibi	prot	collagen	on	
H	מ	0	ው	۳.	ם	۲	4	Œ	ω	Œ	O	4	ወ	ຜ	æ	æ			Ф	Ф	æ	Œ	Φ	æ	æ	ĊŤ	Œ		1	

4.4 5	43	42	41	40	39	38	37	36	35	ω 4	33	32	31	30
36.5 36.5	37	37	37	37.5	37.5	37.5	37.5	37.5	37.5	38	38	38	38	38
9.4	9.5	9.5	9.5	9.6	9.6	9.6	9.6	9.6	9.6	9.7	9.7	9.7	9.7	9.7
42 65	70	69	27	69	61	57	54	42	37	69	69	58	50	45
12	N	N	N	2	2	N	N	N	2	4	2	۳	N	2
D82376 NTSREB	E33172	A84047	JC1081	C71980	D69193	C46654	F31436	T37102	A34396	S58502	149617	Z5BP83	E82816	F64801
hypothetical prote neurotoxin XI - sc	C-ORF-D protein -	hypothetical prote	brain natriuretic	hypothetical prote	hypothetical prote	growth modulatory	ovomucoid, third d	probable sigma fac	pyrBI leader pepti	probable IAA15 pse	gamma-F-crystallin	gene 58 protein -	hypothetical prote	hypothetical prote

ALIGNMENTS

Qy 22 PFLFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYISRCTV 71	Query Match 20.1%; Score 78.5; DB 2; Length 58; Best Local Similarity 35.2%; Pred. No. 0.013; Matches 19; Conservative 8; Mismatches 22; Indels 5; Gaps 2;	A;Residues: 1-58 <tur> C;Superfamily: collagen alpha l(IV) chain C;Keywords: coiled coil; extracellular matrix; glycoprotein; trimer; triple helix</tur>	A;Accession: B43928 A;Status: preliminary; not compared with conceptual translation A:Molecule type: mRNA	A;Title: Molecular cloning of the human Goodpasture antigen demonstrates it to be the A;Reference number: A43928; MUID:92147878	C;Accession: B43928 R;Turner, N.; Mason, P.J.; Brown, R.; Fox, M.; Povey, S.; Rees, A.; Pusey, C.D. T. Clin Tovest 89, 592-601, 1992	C;Species: Ovis orientalis arise, Ovis ammon arise; (domestic sheep) C;Species: 30-Sep-1993 #sequence_revision 30-Sep-1993 #text_change 17-Mar-1999	RESULT 1 843928	

3 PETECHGRGTCNYYA-NSYSEWLATVDVSDMESKPQSETLKAGDLRTRISRCQV 55

Db.

hypothetical protein BBJ11 - Lyme disease spirochete plasmid J/lp38 C;Species: Borrelia burgdorferi (Lyme disease spirochete) C;Date: 13-Feb-1998 #sequence_revision 13-Feb-1998 #text_change 08-Oct-1999 C;Accession: D70246 R;Fraser, C.M.; Casjens, S.; Huang, W.M.; Sutton, G.G.; Clayton, R.; Lathigra, R.; son, D.; Peterson, J.; Kerlavage, A.R.; Quackenbush, J.; Salzberg, S.; Hanson, M.; Bowman, C.; Garland, S.; Fujii, C.; Cotton, M.D.; Horst, K.; Roberts, K.; Hatch, Nature 390, 580-586, 1997

8 Z X

A;Authors: Smith, H.O.; Venter, J.C.
A;Title: Genomic sequence of a Lyme disease spirochaete, Borrelia burgdorferi.
A;Reference number: A70100; MUID:98065943
A;Accession: D70246

A;Status: preliminary; nucleic acid sequence not shown; translation not shown

A; Molecule type: DNA A; Residues: 1-61 <KLE>

A;Cross-references: GB:AE000787; NID:g2690175; PIDN:AAC66098.1; PID:g2690190; TIGR:BB A;Experimental source: strain B31 C;Genetics:

A;Genome: plasmid

Query Match Best Local Similarity 11.7%; 29.8%; Score 45.5; DB 2; Pred. No. 1.2e+02; Length 61;

```
proteinase inhibitor homolog - European eel
C;Species: Anguilla anguilla (European eel)
C;Date: 30-301-1991 #sequence_revision 30-Jun-1991 #text_change 16-Jul-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Ϋ́
                                                                                                                                                                                       submitted to GenBank, June 2000

A; Authors: Ferreira, V.C.A.; Ferro, J.A.; Fraga, J.S.; Franca, S.C.; Franco, M.C.; Erohn J.D.; Junqueira, M.L.; Kemper, E.L.; Kitajima, J.P.; Krleger, J.E.; Kuramae, E.E.; Laigy Chado, M.A.; Madeira, A.M.B.N.; Madeira, H.M.F.; Marino, C.L.; Marques, M.V.; Myaki, C.Y.; A; Authors: Martins, E.M.F.; Matsukuma, A.Y.; Menck, C.F.M.; Miracca, E.C.; Miyaki, C.Y.; F.G.; Nunes, L.R.; Oliveira, M.A.; de Oliveira, M.C.; de Oliveira, R.C.; Palmieri, D.A. Rodrigues, V.; Rosa, A.J. de M.; de Rosa Jr., V.E.; de Sa, R.G.; Santelli, R.V.; Sawasak A; Authors: da Silva, A.C.R.; da Silva, F.R.; da Silva Jr., W.A.; da Silveira, M.; Tsuhako, M.H.; Vallada, H.; Van Sluys, M.A.; Verjovski-Almeida, S.; Vettore, A.L.; Z. A; Reference number: A59328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ρy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Reference number: A; Accession: S00630
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         A; Title: A peptide from the A; Reference number: S00630;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      C; Accession:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 A;Title: The genome sequence of the plant pathogen Xylella fastidiosa. A;Reference number: A82515; MUID:20365717
A;Note: for a complete list of authors see reference number A59328 below
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Вþ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              A; Molecule type: protein
A ridues: 1-61 <CON>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                R; Conlon, J.M.; Thim, L.
                                                                                                                                                                                                                                                                                                                                                                                                                           R;Simpson, A.J.G.; Reinach, F.C.; Arruda, P.; Abreu, F.A.; Acencio, M.; Alvarenga, R.; Briones, M.R.S.; Bueno, M.R.P.; Camargo, A.A.; Camargo, L.E.A.; Carraro, D.M.; Carrer, as-Neto, E.; Docena, C.; El-Dorry, H.; Facincani, A.P.; Ferreira, A.J.S.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       hypothetical protein XF1879 [imported] - Xylella fastidiosa (strain 9a5c)
C;Species: Xylella fastidiosa
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Accession: G82626
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          R; anonymous, The Xyle Nature 406, 151-157,
                                                                                                                                                                   A; Contents: annotation
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A; Experimental source: strain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Species: Xylella fastidiosa;Date: 18-Aug-2000 #text_change 20-Aug-2000;Date: 18-Aug-2000 #sequence_revision 20-Aug-2000 #text_change 20-Aug-2000
  Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Cross-references: GB:AE004008; GB:AE003849; NID:g9106961; PIDN:AAF84685.1; GSPDB:GN00
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Matches
                                                    Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    [0-61/Domain: Kazal proteinase inhibitor homology <KPI>
l2-43,21-40,29-61/Disulfide bonds: #status predicted
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      words: pancreas
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             erfamily: pancreatic secretory trypsin inhibitor; Kazal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            J. Biochem.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           cule type: DNA
dues: 1-66 <SIM>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                25
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      22
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   51 PMNMAPITGRALEPYISRCTV 71
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     σ
                           Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FCNLCITKNIHNIGSLRRYTNFVYDYAFWLSKIAEDYFPDAKDIVCIRGIKKKPYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FCNV - - - NDVCNFASRN - -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      PMNFAPVCGTDGNTYPNECSL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                17;
l Similarity
16; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Similarity
8; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            174,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Conservative
     Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Xylella fastidiosa Consortium of the Organization for Nucleotide Sequer
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            149-153, 1988
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         11.5%;
38.1%;
                         11.4%; 32.7%;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            eel pancreas with structural similarity to human \mbox{\sc MUID}\xspace:88225096
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            9a5c
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      42
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                8
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     4.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Score 45;
Pred. No.
     Score 44.5; D
Pred. No. 1.7e
6; Mismatches
     6;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -DYSYWLSTPA--LMP--MNMAPITGRALEPYI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              . 1.3e+02;
9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  DB 1;
     ; DB 2;
1.7e+02;
hes 18;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Length 61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Indels
                                                  Length 66;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               proteinase inhibitor
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  15;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     0;
          9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  66
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        61
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Gaps
       Gaps
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     4;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        pancreatic
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          0;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  homol
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               hypothetical protein CP0711 [imported] - Chlamydophila pneumoniae (strains CWL029 C;Species: Chlamydophila pneumoniae, Chlamydia pneumoniae C;Date: 23-Apr-1999 #sequence_revision 23-Apr-1999 #text_change 11-May-2000 C;Accession: H72124; E81546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Ωy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Nucleic Acids Res. 28, 1397-1406, 2000
A;Title: Genome sequences of Chlamydia trachomatis MoPn and Chlamydia A;Reference number: A81500; MUID:20150255
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               A;Cross-references: GB:AE001591; GB:AE001363; NID:g4376311; PIDN:AAD18216.1; PID:g437 A;Experimental source: strain CWL029 R;Experimental source: strain CWL029 C.; Gill, S.R.; Heidelberg, J.F.; White, O.; Hicke R;Read, T.D.; Brunham, R.C.; Shen, C.; Gill, S.R.; Heidelberg, J.; McClarty, G.; Salzbe, C.; Dodson, R.; Gwinn, M.; Nelson, W.; DeBoy, R.; Kolonay, J.; McClarty, G.; Salzbe
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            A,Title: Comparative genomes of Clamydia pneumoniae and C. trachomatis A;Reference number: A72000; MUID:99206606
A;Accession: H72124
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       R;Kalman, S.; Mitchell, W.; Marathe, R.; Lammel, C.; Fan, J.; Olinger, L.; Nature Genet. 21, 385-389, 1999
                                                                                                                                                                                                                                                 C; Geneti
A; Gene:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              hypothetical protein CP0591 [imported] - Chlamydophila pneumoniae (strain AR39) C;Species: Chlamydophila pneumoniae, Chlamydia pneumoniae C;Date: 31-Mar-2000 #sequence_revision 31-Mar-2000 #text_change 11-May-2000 C;Accession: D81561
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        R;Read, T.D.; Brunham, R.C.; Shen, C.; Gill, C.; Dodson, R.; Gwinn, M.; Nelson, W.; DeBo Nucleic Acids Res. 28, 1397-1406, 2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          밁
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Qy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Cross-references: GB:AE002230; GB:AE002161; A;Experimental source: strain AR39, HL cells
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A; Molecule type: DNA
A; Residues: 1-52 < REA>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  A; Accession: E81546
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Molecule type: DNA
A; Residues: 1-52 <ARN>
                                                                                                                                                                                                                                                                                                                                                                                                                 A; Reference number: A81500; A; Accession: D81561
                                                                                                                                                                                                                                                                                                                                                                                                                                               A; Title: Genome sequences of Chlamydia trachomatis A; Reference number: A81500; MUID: 20150255
                                                                             QУ
                                                                                                                                                                                                                                                                                              A;Cross-references: GB:AE002217; GB:AE002161; NID:G7189493; PIDN:AAF38409.1; PID:G718
A;Experimental source: strain AR39, HL cells
                                                                                                                                                                                                                                                                                                                                                A; Molecule type: DNA
A; Residues: 1-30 < REA>
                                     В
                                                                                                                                                                                                                                                                                                                                                                                           A; Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Query Match
Best Local Similarity
Matches 13; Conser
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Matches
                                                                                                                                                         Best
                                                                                                                                                                          Query Match
                                                                                                                                Matches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            24 LFCNVNDVCNFASRNDYSYWLSTPALMPMNMAPIT----GRALEPYISRC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   26 CNVNDVCNFASRNDYSYWLSTPALMPMNMAPITGRALEPYISRC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            8 LYCTOYDV--EARTCSQQAWMVPPSLLP----PISYEDVRILLPHIVMC
                                                                                                                                                         Local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ы
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CPn0063;
                                     σ
                                                                                  S
                                                                                                                                                                                                                                                      CP0591
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          CKHNCLCLY----DFSRHRSPPGL-PLTFTPPYSFTLGIFLGRC
                                                                                GQDLGTLGSCLQRFTTMPFL 24
                                     GQARVTAGSCLAKFQTETLL
                                                                                                                                10;
                                                                                                                                                         Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             CP0711
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Conservative
                                                                                                                                  Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                11.2%;
                                                                                                                                                      11.0%;
                                     25
                                                                                                                                                      Score 43;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 43.5;
Pred. No. 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   W.; DeBoy,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Mismatches
                                                                                                                                     Mismatches
                                                                                                                                  . 1.1e+02;
9;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      , S.R.; F
Boy, R.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ; DB 2;
1.7e+02;
hes 20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NID:g7189624; PIDN:AAF38519.1;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Heidelberg, J.F.; White, O.;
Kolonay, J.; McClarty, G.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                         MoPn and Chlamydia pneumoniae AR39
                                                                                                                                                                               Length 30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Length 52;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  43
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Indels
                                                                                                                                       Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      69
```

5

2

G.; Salzbe

pneumoniae AR39

PID:g718

Grimwood,

and

0;

Gaps

0;

```
Result
No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Minimum DB
Maximum DB
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     OM protein -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Database
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Searched:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Scoring table:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Sequence:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Perfect score:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Title:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Run on:
   number of hits satisfying chosen parameters:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Score
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      seq length:
seq length:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   protein search, using sw model
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Issued_Patents_AA:*

1: /cgn2_6/ptodata/2,

2: /cgn2_6/ptodata/2,

3: /cgn2_6/ptodata/2,

4: /cgn2_6/ptodata/2,

5: /cgn2_6/ptodata/2,

6: /cgn2_6/ptodata/2,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Match Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Query
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-09-543-371-10_COPY_185_203
115
1 SPFLECHGRGTCNYYCNCV 10
 28.77
20.88
20.77
20.88
20.77
20.88
20.77
20.88
20.77
20.88
20.77
20.88
20.77
20.88
20.77
20.88
20.77
20.88
20.77
20.88
20.77
20.88
20.77
20.88
20.77
20.77
20.78
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
20.77
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          April 13, 2001, 15:47:13; Search time 14.26 Seconds (without alignments) 25.597 Million cell updates/sec
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              185757 seqs, 19210857 residues
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Gapop 10.0 ,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      BLOSUM62
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     GenCore version 4.5
Copyright (c) 1993 - 2000 Compugen Ltd.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 /cgn2_6/ptodata/2/iaa/5A_COMB.pep:*
/cgn2_6/ptodata/2/iaa/5B_COMB.pep:*
/cgn2_6/ptodata/2/iaa/6A_COMB.pep:*
/cgn2_6/ptodata/2/iaa/6B_COMB.pep:*
/cgn2_6/ptodata/2/iaa/BCTUS_COMB.pep:*
/cgn2_6/ptodata/2/iaa/backfiles1.pep:*
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       19
         B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Gapext 0.5
                US-08-267-092A-57
US-08-267-092A-64
US-08-267-092A-64
US-08-540-412-59
US-08-540-412-59
US-09-051-342-56
US-09-051-342-56
US-09-051-342-66
US-09-051-759-58
US-09-051-759-58
US-09-051-759-58
US-09-051-759-66
US-09-051-759-66
PCT-US95-08156-58
PCT-US95-08156-66
US-08-08-08-046-17
5189020-17
US-08-18-9708-6
US-08-179-481-55
522746-14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           I
   us-09-115-395-69
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SUMMARIES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              95100
Sequence Sequence Sequence Sequence Sequence Patent No. Patent No. Sequence Sequence
                                                                                                                                                                                                                                                  Sequence
Sequence
Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Description
                                                                                                                                                                                                                                                                                                        Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
Sequence
                                                                                                                                                                                                                Sequence
Sequence
                                                                   17, Appl
. 5189020
. 5424218
1, Appli
6, Appli
55, Appl
                5227466
103, App
5223254
                                                                                                                                                                                                 Appl
                                                                                                                                                                                                                  Appl
```

HOLECULE TYPE: p
HYPOTHETICAL: NO
HYPOTHETICAL: NO
HATI-SENSE: NO
FRAGMENT TYPE: 1
US-08-267-092A-57

: peptide NO internal

Query Match
Best Local Similarity
Matches 6; Conserv

Conservative

2

28.7%;

Score 33; Pred. No. Mismatches DB . 79; 1;

Length 15; Indels

0;

Gaps

0;

		я В В	
APPLICATION NUM APPLICATION NUM FILING DATE: CLASSIFICATION: CLASSIFICATION: ATTORNEY/AGENT IN NAME: Muthard, REGISTRATION NUM REFERENCE,DOCKE TELECOMMUNICATION TELEFAX: (908) INFORMATION FOR SEQ SEQUENCE CHARACTE LENGTH: 15 ami TYPE: amino ac STRANDEDNESS: TOPOLOGY: line MOLECULE TYPE: p	Sequence 57, Appl. Patent No. 55968 GENERAL INFORMAT: APPLICANT: Del APPLICANT: Gai APPLICANT: Ol. TITLE OF INVENT NUMBER OF SEQUI CORRESPONDENCE: ADDRESSEE: 126 CITY: Rahwa: STATE: New COUNURY: US; ZIP: 07055-1 COMPUTER READAL COMPUTER R	28 29 30 31 31 32 33 34 35 35 37 38 40 41 41 42 42 43 44 43 44 45 46 47 48 48 48 48 48 48 48 48 48 48 48 48 48	
APPLICATION N FILING DATE: CLASSIFICATION TORNEY.AGENT NAME: Muthar REGISTRATION REFERENCE.DOC LECOMMUNICATI TELEPHONE: (90 TELEFAX: (90 TELEFAX: (190 TENGTH: 15 AG LENGTH: 15 AG TYPE: amino TYPE: amino TYPOLOGY: 11 LECULE TYPE:	nt NO. 559 BEAL INFOR PPLICANT: PPLICANT: PPLICANT: PPLICANT: PPLICANT: ITLE OF IN UMBER OF S' DRRESPONDE. ADDRESSEE STREE: N COUNTRY: Ra STATE: N STATE: N STATE: N STATE: N COUNTRY	1	
	quence 57, Application US/08267 tent No. 5599686 ENERAL INFORMATION: APPLICANT: DeFeo-Jones, Debor APPLICANT: Garsky, Victor M. APPLICANT: Jones, Raymond E. APPLICANT: JOLIFF, Allen I. TITLE OF INVENTION: NOVEL PEP NUMBER OF SEQUENCES: 65 CORRESPONDENCE ADDRESS: ADDRESSEE: David A. Muthard STREET: 126 E. Lincoln Aven CITY: Rahway STATE: New Jersey COUNTRY: USA ZIP: 07065-0900 COMPUTER READABLE FORM: MEDIUM TYPE: Floppy disk COMPUTER: IBM PC COmpatible OPERATING SYSTEM: PC-DOS/MS SOFTWARE: Patentin Release	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	
UMABER: US/08 N: 435 N: 435 INFORMATION: d, David A. MUMBER: 35,29 MUMBER: 10 ON INFORMATION 908) 594-3903 B) 594-39	n ccc nc n	110000000000000000000000000000000000000	
	S/0826709 Ltor M. Ltor M. Lord E. n I. VEL PEPTI 5 Muthard In Avenue In Avenue Lpatible LpoS/MS-D Lelease #1		
/08/267,092A N: 	092A TIDES TIDES -DOS #1.0,	US-08-467-580 PCT-US95-0851 US-08-267-092 US-08-267-092 US-08-540-412 US-08-540-412 US-08-540-412 US-08-540-413 US-09-051-342 US-09-051-342 US-09-051-342 US-09-051-342 US-09-051-759 US-09-051-759 US-09-051-759	
	O. Box 2000	-467-580-125 -895-08516-125 -267-092A-2 -267-092A-65 -540-412-2 -540-412-66 -540-412-66 -540-412-65 -540-412-65 -6468-161-65 -468-161-66 -468-161-65 -468-161-65 -468-161-65 -468-161-65 -468-161-65 -468-161-65 -468-161-65	
		Sequence	
		nnce nnce nnce nnce nnce nnce nnce nnce	
		256425664256521125 2564256666666666666666666666666666666	
		Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli Appli	

DP GA

8 GRGTCNYYSNS

1 GRGISSQYSNT 11

```
US-08-267-092A-64
                                                                                                                                                                                    Дb
                                                                                                                                                                                                              Ş
                                                                                                                                                                                                                                                                                                                  US-08-267-092A-64
                                                                                                                              US-08-540-412-58
                                                                                                                                           RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               sequence 64, Application US/08267092A Patent No. 5599686
                                                                                                                                                                                                                                              Matches
                                                                                                                                                                                                                                                                     Query Match
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 GENERAL INFORMATION:
                                                                                                             Sequence
                                                                                                 Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                           TELEFAX: (908) 594-47 INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: Defeormance
APPLICANT: Garsky, Victor M.
APPLICANT: Jones, Raymond E.
APPLICANT: Oliff, Allen I.
APPLICANT: TNVENTION: NOVEL PEPTIDES
                                                                                  GENERAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            NUMBER OF SEQUENCES: 6
CORRESPONDENCE ADDRESS:
                                     APPLICANT:
APPLICANT:
APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SOFTWARE: PatentIn Release #1.0, CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE CHARACTERISTICS:
LENGTH: 15 amino acids
TYPE: amino acid
STRANDEDNESS: single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        TELECOMMUNICATION INFORMATION:
TELEPHONE: (908) 594-3903
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
NAME: Muthard, David A.
REGISTRATION NUMBER: 35,
REFERENCE/DOCKET NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     STREET: THE STREET: THE STREET RAHWAY
                                                                                                                                                                                                                                                                                                                               HYPOTHETICAL: NO TRAGMENT TYPE:
                                                                                                                                                                                                                                                                                                                                                                    TOPOLOGY: li
          APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           COUNTRY: USA
ZIP: 07065-0900
                                                                                                                                                                                                                                         Local Similarity hes 6; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICATION NUMBER:
                                                                                                                                                                                       1 GKGISSQYSNS 11
                                                                                                                                                                                                     8 GRGTCNYYSNS 18
OF
                                                                                               58, Application US/08540412
5. 5866679
                                                                                   INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        New Jersey
INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                126 E. Lincoln Avenue, P.O. Box 2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         USA
                                                                                                                                                                                                                                            Conservative
            Jones, Raymond E. Oliff, Allen I.
                                                                    DeFeo-Jones, Deborah
                                                                                                                                                                                                                                                                                                                                                                                       linear
                                     Garsky,
                                                        Feng, Dong-Mei
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  David A. Muthard
                                                                                                                                                                                                                                                                                                                                                             NO.
                                                                                                                                                                                                                                                                                                                                  internal
                                                                                                                                                                                                                                                                                                                                                                         peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                            594-4720
                                            Victor M.
                                                                                                                                                                                                                                                            28.7%;
 NOVEL PEPTIDES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           US/08/267,092A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               35,297
                                                                                                                                                                                                                                                                                                                                                                                                                                                                64:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        19253
                                                                                                                                                                                                                                                            Score 33;
Pred. No.
                                                                                                                                                                                                                                                 Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Version
                                                                                                                                                                                                                                                             DB 1;
79;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           #1.25
                                                                                                                                                                                                                                                                         Length 15;
                                                                                                                                                                                                                                                 Indels
                                                                                                                                                                                                                                                 0;
                                                                                                                                                                                                                                                   Gaps
```

```
B
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             QΥ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                US-08-540-412-58
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        RESULT
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      US-08-540-412-59
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Query Match 28.7%;
Best Local Similarity 54.5%;
Matches 6; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Patent No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CLASSIFICATION: 530
ATTORNEY/AGENT INFORMATION:
NAME: Muthard, David A.
REGISTRATION NUMBER: 35,297
REFERENCE/DOCKET NUMBER: 1925
TELECOMMUNICATION INFORMATION:
TELEPHONE: (908)594-3903
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       GENERAL INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              HYPOTHETICAL: NO ANTI-SENSE: NO FRAGMENT TYPE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         NUMBER OF SEQUENCES: 1
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0,
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            COMPUTER READABLE FORM: MEDIUM TYPE: Floppy
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            SEQUENCE CHARACTERISTICS:
LENGTH: 15 amino acids
TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MOLECULE TYPE:
                      COMPUTER READABLE FORM:
MEDIUM TYPE: . Floppy disk
COMPUTER: IBM CC compatible
COMPUTER: IBM CC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                  NUMBER OF SEQUENCES: 1
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICANT: Garsky, Victor M. APPLICANT: Jones, Raymond E. APPLICANT: Oliff, Allen I. TITTLE OF THE PROPERTY OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 APPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                TITLE OF INVENTION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          COUNTRY: UZIP: 07065
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STREET: 126 CITY: RAHWAY
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICATION NUMBER:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               STRANDEDNESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              TOPOLOGY:
                                                                                                                                                                                                                                                                                                              STATE:
                                                                                                                                                                                                                                                                                COUNTRY:
                                                                                                                                                                                                                                                                                                                                                      CITY: RAHWAY
                                                                                                                                                                                                                                                                                                                                                                                STREET:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 GKGISSQYSNS 11
                                                                                                                                                                                                                                                                                                                                                                                                                        ADDRESSEE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8 GRGTCNYYSNS 18
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           59, Application US/08540412
5. 5866679
                                                                                                                                                                                                                                               07065
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       NEW JERSEY
: U.S.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   E: DAVID A. MUTHARD
126 E. Lincoln Avenue, P.O. BOX 2000
                                                                                                                                                                                                                                                                            NEW JERSEY
: U.S.A.
                                                                                                                                                                                                                                                                                                                                                                                126 E. Lincoln Avenue, P.O. BOX 2000
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        (908)594-4720
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Feng, Dong-Mei
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Defeo-Jones,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 linear
                                                                                                                                                                                                                                                                                                                                                                                                                        DAVID A. MUTHARD
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     internal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         peptide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               single
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                NOVEL PEPTIDES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         194
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          US/08/540,412
US/08/540,412
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Deborah
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Score 33;
Pred. No.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       19253IC
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Version #1.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            DB
. 79;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Length 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      0;
```

Gaps

0

APPLICATION NUMBER: FILING DATE: